

**REVENGE IN THE CONTEXT OF TRAUMA AND PTSD:
FINDINGS FROM A SAMPLE OF FORMER EAST GERMAN POLITICAL
PRISONERS**

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ABSTRACT

It is known from research (e.g., Orth et al., 2003) and from the field of psychotherapeutic treatment (e.g., Horowitz, 2007) that victims of severe traumatization often struggle with intense feelings and fantasies of revenge. Such intrapersonal aspects of revenge have been reported to be related to the Posttraumatic Stress Disorder (PTSD; e.g., Bayer et al., 2007). Yet, little is known about intrapersonal variables that may contribute to the development of revenge after trauma, the causality relations between revenge and PTSD, and the association between revenge and forgiveness in trauma victims. The current work summarizes recent theoretical knowledge on psychological aspects of revenge and empirically examines revenge after trauma in a sample of former East German political prisoners. In view of previous studies, the concept of revenge was extended and limitations in the conceptualization and operationalization of both revenge and forgiveness were addressed.

This work provides a theoretical approximation to revenge following trauma and proposes a theoretical model on intrapersonal variables hypothesized to underlie revenge or to mediate the relation between revenge and PTSD (Article I). Furthermore, findings from the investigated sample of former political prisoners demonstrate the occurrence of mental revenge phenomena more than four decades after trauma. Results support the hypothesis that, in addition to established standard predictors for PTSD, revenge feelings and cognitions contribute to the prediction of current PTSD symptoms (Article II). They also support the hypothesis that posttraumatic revenge and forgiveness cannot be regarded as opposite poles of one psychological dimension. Finally, forgiveness is shown to have no improving effect on PTSD symptomatology, a finding that calls into question the health-improving role of forgiveness in victims of severe traumatization (Article III). An overall discussion addresses limitations of the present study and implications for future research on revenge after traumatic experiences as well as for psycho-

therapeutic and societal interventions for trauma victims, especially for victims of political imprisonment.

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INCLUDED PAPERS

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INTRODUCTION

Revenge is a mental phenomenon that has been known and described for thousands of years. Aristotle (384-323 B.C.), for instance, already noted that an unjustified severe humiliation or offense can produce anger and an impulse toward revenge (see Eisenberger et al., 2004). In the Old Testament and in the Tora, the so-called Lex Talionis, which is the principle of retaliation via similar means, was propagated. This concept of “an eye for an eye and a tooth for a tooth” has been seen as important precept providing a moral foundation for revenge as a response to experienced wrongness (see Eisenberger et al., 2004). Since then, especially during wars, armed conflicts, and political crises, revenge phenomena could and can still be observed in human experience, thinking, and behavior. In Western culture, however, feelings or fantasies of revenge are mostly suppressed and denied because they are not socially accepted and contradict both modern jurisdiction and the Christian religious and moral principle of forgiveness (Stuckless & Goranson, 1992). Revenge is also rarely acted out in Western societies. Nonetheless, intrapersonal aspects of revenge, such as emotions and thoughts, do occur, especially after experiences of severe harm and injustice. The emergence of revenge is well known from research in various situational contexts as well as from clinical reports related to psychotherapy (Horowitz, 2007; Orth et al., 2003).

The current work focuses on this intrapersonal, psychological side of revenge that encompasses revenge feelings, thoughts, attitudes, and intentions. Intrapersonal revenge phenomena may derive from adverse everyday situations, such as interpersonal discrepancies within social relationships (McCullough et al., 2001; McCullough et al., 1998). Revenge is, however, more likely to occur and gain intensity following severe transgression and traumatic experiences that are characterized by grave injustice and harm, violation of personal integrity and rights (Orth et al., 2003), humiliation, or threat to sense of identity (Frijda, 1989). Several studies have reported the occurrence of feelings and fantasies of revenge in individuals exposed to

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traumatic experiences, including samples of survivors of war (Bayer et al., 2007; Lopes Cardozo et al., 2003), crime victims (Orth et al., 2006), and even survivors of natural catastrophes (Goenjian et al., 2001). Moreover, it could be shown that persistent revenge phenomena in trauma victims negatively influence mental health, specifically the occurrence of Posttraumatic Stress Disorder (PTSD; Bayer et al., 2007; Orth et al., 2006). These findings indicate that revenge is highly relevant to mental disorders, especially in survivors of trauma. However, although revenge following traumatic experiences was associated with PTSD in several studies, little systematic research has been conducted on this topic, especially with regards to causality relations between revenge and PTSD and the different facets of revenge and variables related to it (Orth, 2003).

This dissertation is therefore intended to contribute to recent trauma research by offering scientific insights into the issue of intrapersonal aspects of revenge after trauma and their relation to PTSD as a common mental disorder following severe trauma (American Psychiatric Association, 2000). One of its three main research aims was to develop a theoretical approximation to the complex phenomenon of mental revenge following trauma. Based on a detailed review of recent psychological literature on revenge, the first article presented in this thesis provides an overview both of intrapersonal and external variables reported to be related to revenge and of the relation between revenge and PTSD. It also introduces a self-developed model on the association between revenge and PTSD and on processes hypothesized to underlie revenge as deduced from the professional literature. This article aimed at identifying intrapersonal and contextual antecedents for the development of revenge after trauma and variables that influence the relation between revenge and PTSD. Identification of these has important implications for future research on revenge after trauma as well as for clinical practice in particular. Recognizing the specific emotions, cognitions, motives, and situational factors that drive revenge and may therefore contribute to the development or maintenance of posttraumatic mental disorders could help to target these dysfunctional processes in psychotherapy of trauma victims.

The second aim of the current work was to prove the assumed relationship between revenge phenomena and PTSD symptoms in a sample of trauma survivors. The main research questions thereby were the following: Do several aspects of current revenge, namely feelings, cognition, and intentions, predict current PTSD symptomatology? And if so, do they also predict PTSD when standard predictive variables of PTSD are controlled for? To investigate these questions, the amount of variance in each PTSD symptom category explained by revenge was tested, as was the variance explained by standard predictors for PTSD. In the course of investigation, shortcomings of previous studies on revenge and PTSD were addressed. Whereas in earlier studies only one or few items tapping revenge were applied, the present study assessed different aspects of revenge to obtain detailed information about their effects on PTSD symptoms. Furthermore, both self-reported and clinician-rated data on PTSD were gathered to improve the empirical quality of the study. Investigating revenge as a predictor for PTSD in traumatized people is of practical clinical relevance: In contrast to established predictors such as the unchangeable factors of gender, age at traumatization, and trauma severity, posttraumatic revenge phenomena can be therapeutically targeted. Findings on the predictive power of revenge for PTSD symptoms are presented in the second article of this work.

Third, a topic that has been hardly investigated in trauma research is the relation between revenge and forgiveness after trauma. Whereas some authors have suggested that forgiveness is the opposite mental state of revenge (Mullet et al., 1998), recent findings indicate that the relation between the two phenomena is more complex than that (Brown, 2003). The dimensionality of revenge and forgiveness after trauma and the relation of each to PTSD were the focus of the third article presented in this work. The specific research questions in this context were: Are revenge and forgiveness distinct psychological phenomena as hypothesized, or are they two poles of one psychological dimension? What factors underlie the assessed aspects of revenge and forgiveness? And do factors that possibly underlie revenge and forgiveness have different impact on current PTSD symptoms? The latter question specifically refers to effects of

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forgiveness in comparison to effects of revenge on PTSD. In connection with previous findings that the health-improving mechanisms of forgiveness may stem mainly from reductions in revenge (Orth et al., 2006; Worthington, 1998), it was assumed in the current investigation that forgiveness does not explain incremental variance in PTSD symptoms beyond the explanatory power of revenge. Studying the association between revenge and forgiveness and the specific effect of forgiveness on PTSD symptoms can shed light on the usefulness of forgiveness interventions in psychotherapy of traumatized patients. When treating survivors of severe trauma, it is crucial to know whether therapeutic interventions should focus on reducing dysfunctional revenge phenomena or whether they should promote forgiveness. Answers to these research questions are provided in the third article and results are discussed with respect to therapeutic implications.

Outcomes presented in this thesis were derived from a larger data set obtained from a sample of traumatized former East German political prisoners. The present study is a follow-up study on long-term mental sequelae of political imprisonment in East Germany. The first investigation was conducted in 1995 in Dresden, located in former East Germany. Approximately thirteen years later, in 2008, a follow-up was carried out, focusing on intrapersonal revenge phenomena and their association with PTSD. To my knowledge, no other study has investigated revenge and its relation to PTSD after political imprisonment, even though this trauma group seems to be especially prone to long-term PTSD and to feelings and thoughts of revenge. Moreover, no study has assessed the dimensionality underlying revenge and forgiveness in the context of severe traumatization and the associations of each with PTSD. The many forms of political persecution, incarceration, and torture in past and present history underscore the high relevance of studying after-effects of such traumatic events, especially of variables that may affect posttraumatic symptoms, such as the occurrence of revenge. By addressing this topic and targeting weakness of previous investigations, the present work contributes to closing a gap in

trauma research and to generating knowledge on revenge after trauma that has both theoretical and practical importance.

Theoretical Background

Whereas the first article included in the thesis provides a general theoretical overview of revenge, its relation to PTSD, and variables assumed to be related to revenge, this chapter summarizes definitions and findings from previous studies that are specifically relevant to the empirical investigation of revenge, forgiveness, and PTSD presented in this work.

The chapter is structured as follows: First, the historical and political background of political imprisonment in former East Germany is introduced to facilitate understanding of the specific trauma context and possible preconditions for the development and maintenance of both PTSD symptoms and revenge phenomena in the investigated sample. Second, PTSD is defined according to DSM-IV criteria. In addition, findings from previous studies on PTSD following political imprisonment are presented. Third, the main concept of this work, revenge, is introduced and findings from earlier studies on the relation between revenge phenomena and PTSD are reviewed. Fourth, the concept of forgiveness is introduced and previous findings on the relation between revenge and forgiveness are outlined. Finally, results from previous investigations addressing the relationship between forgiveness and PTSD are summarized. Following this theoretical introduction, the three articles included in the current thesis are presented and discussed.

Political imprisonment in the former GDR

During the 40 years of East Germany (1949-1989), 150000 to 200000 people were sentenced and imprisoned for political reasons (Fricke, 1994; Orth et al., 2003). These reasons encompassed direct or indirect political opposition to the socialist system, such as critically commenting on the regime, refusing military service, applying for permission or illegally attempting

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to leave the country, and participating in political or church activities, but also more trivial reasons, such as telling political jokes (Werkentin, 1995). Political imprisonment in East Germany encompassed two stages, remandment and incarceration. Remandment was subordinated to the State Security Police and lasted at least several months. During this stage, the prisoners awaited their trial and were interrogated. After being sentenced, they were incarcerated in the regular penal system together with criminal prisoners. During the remand proceedings but also later, in post-trial confinement, the prisoners were exposed to harsh interrogation and confinement methods that included both physical and psychological maltreatment. They were exposed to beatings, refusal of medical care or nourishment, verbal abuse, special confinement methods such as solitary or dark confinement, deprivation of sleep, many hours of nightly interrogations, humiliating prison labor, and even threats to life and mock executions (Bauer et al., 1993; Maercker & Schützwohl, 1997). Until the 1970s, causes of death among political prisoners were mostly starvation or poor medical care (Werkentin 1995). After the Conference on Security and Co-operation in Europe (KSZE) in Helsinki in 1975, when East Germany was obliged to comply with the international declaration regulating prison conditions, conditions of detention improved. Nonetheless, stressful and threatening interrogation methods and psychological maltreatment during detention continued. According to Amnesty International, these detention methods meet the criteria for torture (AI, 1989).

After release from prison, the former prisoners either returned to East Germany or were “bought out” by West Germany. In both cases, most of them were not able to speak about their traumatic experiences, either because they were forbidden by the state and threatened with further restrictions or punishment, or, if free to talk about their experiences, they were confronted with disbelief and lack of understanding and acknowledgement from their social environment (Mutter, 2011). Lack of social acknowledgment for being a victim has been shown to be a risk factor for PTSD symptoms (Müller & Maercker, 2006). Even after the political change in Germany in 1989, neither the anticipated compensation and acknowledgement nor the anticipated

punishment of those responsible for incarcerations and torture occurred on a large scale. Moreover, most former political prisoners never received psychotherapeutic treatment or were treated only after long delays. Thus, taking into account the state-organized, systematic, and deliberate character of political imprisonment (Basoglu & Mineka, 1992), the grave injustice by unwarranted incarceration, the traumatic prison conditions, the long duration of imprisonment, and the unsatisfying social and societal circumstances after release, political imprisonment in former East Germany can clearly be classified as a highly traumatizing event causing severe and enduring PTSD symptoms (Maercker & Schützwohl, 1997). It can also be assumed that political imprisonment in East Germany led to intense feelings and thoughts of revenge in this specific trauma group.

To illustrate the severe and impairing character of posttraumatic stress symptoms, the following section introduces the concept of Posttraumatic Stress Disorder (PTSD) and the criteria for the disorder as defined by the American Psychiatric Association (APA, 2000).

PTSD

Posttraumatic stress disorder is one of the most common psychological disorders following traumatic experiences (APA, 2000). According to the Diagnostic and Statistical Manual (DSM-IV, 2000) of the American Psychiatric Association (APA), a traumatic event is defined as personal experience, confrontation, or witnessing of actual or threatened death, serious injury, or threat to life or physical integrity of self or others, which leads to intense feelings of horror, fear, or helplessness (criteria A1 and A2).

PTSD symptoms are assigned to three symptom categories: Symptoms of the first category, Intrusion, are characterized by the persistent re-experiencing of the traumatic event. This category encompasses recurrent, uncontrollable, and distressing recollections of the event that include intrusive thoughts and perceptions, recurring nightmares, and flashbacks. It further encompasses the experience of intense psychological distress and physiological reactivity when

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the individual is exposed to internal or external cues that recall an aspect of the traumatic event (criterion B). The second category, Avoidance, refers to the avoidance of stimuli associated with the traumatic event and to numbing of general responsiveness that did not exist before the trauma. Avoiding feelings, conversations, places, or people that may trigger uncomfortable recollections and physiological reactivity, the inability to recall aspects of the trauma, diminished activities and interest, estrangement of others, and restricted affect range are possible symptoms of this category. The third category, Hyperarousal, encompasses symptoms of increased hyperarousal that did not exist before the traumatic event. Trauma victims may suffer from sleep disorders, intense feelings of anger, difficulties in concentrating, or strong startle responses (criterion C). To be diagnosed as PTSD, symptoms must last for over one month (criterion E) and cause clinically relevant distress, suffering, or impairment of quality of life and social or professional functioning (criterion F). Table 1 summarizes the symptoms of the PTSD symptom categories and the number of symptoms required for a diagnosis of PTSD according to the DSM-IV (DSM-IV, 2000).

Table 1 Summarized criteria for PTSD according to DSM-IV

Symptom category	Definition/ Associated symptoms	Number of re- quired symptoms
A 1. Stressor	Experience, confrontation, or witnessing of actual or threatened death or serious injury, or threat to physical integrity of self or others	One or more
A 2. Initial reaction	Intense feelings of horror, fear, or helplessness	-
B. Intrusion	1. Recurrent distressing recollections of the event (images, thoughts, or perceptions) 2. Recurrent distressing dreams of the event 3. Acting or feeling as if the traumatic event were recurring (sense of reliving the event, illusions, hallucinations, dissociative flashbacks) 4. Intense psychological distress at exposure to internal or external trauma-related cues 5. Physiologic reactivity upon exposure to internal or external trauma-related cues	At least one
C. Avoidance/Numbing	1. Efforts to avoid feelings, thought, conversations associated with the trauma 2. Efforts to avoid activities, places, or people that arouse recollections of the trauma 3. Inability to recall important aspects of the trauma 4. Markedly diminished interest or participation in significant activities 5. Feeling of detachment or estrangement from others 6. Restricted range of affect (e.g., inability to have loving feelings) 7. Sense of foreshortened future (e.g., no expectations of career, marriage, children, or normal life span)	At least three
D. Hyperarousal	1. Difficulty falling or staying asleep 2. Irritability or outbursts of anger 3. Difficulty in concentrating 4. Hypervigilance 5. Exaggerated startle responses	At least two
E. Duration	Duration of the disturbance (symptoms B, C, and D) more than one month	
F. Functional significance	Clinically significant distress or impairment in social, occupational, or other important areas of functioning	

The DSM-IV differentiates between acute PTSD (symptom duration of less than three months) and chronic PTSD (symptom duration of three months or more), as well as between PTSD with or without delayed onset. Delayed onset implies that the onset of symptoms is at least six months after the traumatic event has occurred.

Political imprisonment in East Germany clearly fulfills criteria A1 and A2 in the DSM-IV diagnosis of PTSD. Moreover, political imprisonment, as a long-lasting traumatic event that includes multiple traumatic experiences, can be classified as type II trauma. Because man-made and type II trauma in particular have often been reported to result in severe and chronic PTSD

symptomatology (Maercker, 1998), political prisoners appear especially vulnerable to long-lasting PTSD symptoms. Indeed, several studies have shown the occurrence of PTSD symptoms following traumatization by political imprisonment in general. The following chapter summarizes findings from previous research on this issue.

PTSD after political imprisonment

A variety of studies have shown persistent posttraumatic stress symptoms in victims of political imprisonment that outlast even changes in the political system (David & Choi, 2006). In the first study on the current sample of former East German political prisoners in 1995, approximately one third of the sample fulfilled the diagnostic criteria for PTSD, on average 25 years after their release from prison (Maercker & Schützwohl, 1997). In this sample, the lifetime prevalence of PTSD was about 60 percent (Maercker & Schützwohl, 1997). Similarly, in a sample of former political detainees who had been arrested by the Romanian communist regime, one third had a current PTSD diagnosis, decades after release from prison, and the lifetime prevalence was more than 50 percent (Bichescu et al., 2005). Some lower rates of PTSD were reported in a sample of former imprisoned political activists in Turkey, where current PTSD was found in one fifth of the participants and the lifetime prevalence was more than 30 percent (Basoglu et al., 1994). The authors of the latter study stated that mental preparedness for the event, strong commitment to a cause, and strong social support after release may have been especially protective against PTSD (Basoglu et al., 1994). For the most part, however, these factors were not given in East German political prisoners. Among yet another sample, political activists who had experienced torture during their imprisonment during the apartheid era in South Africa, nearly 40 percent scored above the cut-off point for PTSD (Kagee, 2005). The high rates of PTSD reported in these studies years or even decades after the end of trauma indicate that PTSD symptoms are highly likely to develop and persist after political imprisonment.

The specific characteristics of political imprisonment and especially of political imprisonment in East Germany—such as the arbitrariness of imprisonment, the general unexpectedness of arrest (Maercker, 1998), the experienced threats and injustice during and after imprisonment, and the failed restoration of justice after the political changes (Orth et al., 2003)—can be assumed to contribute not only to persistent PTSD symptoms but also to the development of feelings and fantasies of revenge in the victims. However, no study has investigated the occurrence of intrapersonal aspects of revenge and their association with PTSD in former political prisoners, although a relation between revenge and PTSD has been reported for other trauma groups. To provide an overview of recent knowledge on the association between revenge and PTSD in trauma survivors, findings from previous related studies are summarized in the following section.

The relation between revenge and PTSD

Several studies have mentioned the occurrence of feelings and thoughts of revenge in the aftermath of trauma in different trauma contexts such as war, civil trauma, and even natural disasters. Some of these studies have also found evidence for a relation between revenge and PTSD. In a sample of Albanians from Kosovo exposed to war, for instance, approximately half of the interviewed persons reported strong feelings and fantasies of revenge one year after the end of the Kosovo War. In addition, more than one third of them stated that they might act on their fantasies (Lopes Cardozo et al., 2000; Lopes Cardozo et al., 2003). Feelings of revenge were also reported by former Ugandan and Congolese child soldiers (Bayer et al., 2007). In these samples, persistent thoughts or feelings of revenge predicted PTSD symptoms in the victims (Bayer et al., 2007; Lopes Cardozo et al., 2003). Similarly, victims of crimes such as rape, robbery, and deprivation of liberty have been shown to experience intense and persistent feelings of revenge even years after the offense (Orth, 2003; Orth et al., 2006). Feelings of revenge have further been shown to explain incremental variance in PTSD symptoms in crime victims

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(Orth et al., 2006). Finally, the occurrence of feelings of revenge has been reported even in samples of survivors of natural catastrophes. After the 1998 hurricane in Nicaragua, more than half of the surveyed adolescent victims voiced thoughts of revenge against their government because of insufficient warnings and emergency aid (Goenjian et al., 2001). Likewise, three months after a severe earthquake in Greece in 1999, the interviewed children and adolescents reported thoughts of revenge (Roussos et al., 2005). Feelings and thoughts of revenge were found to predict PTSD symptoms in these samples as well (Goenjian et al., 2001; Roussos et al., 2005). However, not all studies that gathered data on both revenge and PTSD symptoms tested possible associations between revenge and PTSD. In a sample of war-exposed Afghans, for instance, one fifth of interviewees disabled during the war reported a desire for revenge; almost one third said that they might act on this desire (Lopes Cardozo et al., 2004). PTSD prevalence in this sample was about 40 percent. Although no information on the predictive power of the desire for revenge on PTSD is available from this study, according to findings from other studies reported above, a relation between the two variables seems likely.

It should be noted here that revenge has also been mentioned in the context of other mental disorders such as the proposed Posttraumatic Embitterment Disorder (PTED; see *Article I*). The association between revenge and PTED has never been empirically investigated, however, and this recently developed concept is not in the focus of the current work.

In sum, the findings cited above provide empirical evidence for the occurrence of feelings and thoughts of revenge following traumatic experiences and for revenge as a predictor for PTSD symptoms. However, these studies were cross-sectional, and none of them tested the causality relations between revenge and PTSD. It therefore remains unclear whether revenge phenomena stem from PTSD symptomatology or whether they contribute to the development or to the maintenance of PTSD symptoms. Additionally, these studies can be criticized with respect to the operationalization of revenge. Most of them used just a few items or a single question to assess the extent of revenge and widely neglected other possible facets of intrapersonal revenge.

While addressing these shortcomings, the second article presented in the current thesis investigated the predictive power of different aspects of revenge for PTSD symptoms in traumatized former political prisoners.

Before going any further, it is crucial to explain and define the term revenge. Revenge has been reported to occur after trauma and to be associated with PTSD. But what exactly does revenge mean? Which characteristics define it in comparison to related phenomena such as retribution? The following section introduces the concept of revenge and provides a definition that served as the basis for the empirical investigation presented in this thesis.

Revenge

There is no standard definition of revenge in the recent literature. Different theoretical approaches center on different characteristics of revenge and define it according to their specific focus. Moreover, revenge and related terms have been used differently in the professional literature: Similar terms are sometimes used interchangeably; at other times, very detailed distinctions between revenge and similar concepts are made. In the first part of this section, the different concepts related to revenge are disentangled and organized according to their emotional intensity. Following this, a definition of revenge as applied in the present work is given.

As mentioned, a variety of similar concepts has been used to express aspects of reciprocating received harm and injustice. First, punishment is commonly regarded as the legal form of retribution that operates according to established legal rules. It can be distinguished from revenge by its appropriateness. Punishment aims at restoring balance and re-establishing social consensus about societal norms (Strelan et al., 2008). It should be unemotional and acted out by an objective and authorized third party (Gollwitzer, 2004). Revenge, in contrast, is defined as an inappropriate and intense emotional response acted out by unauthorized persons (Zaibert, 2006). Second, the term negative reciprocity is sometimes used to describe a superordinate concept subsuming retribution, vengeance, and revenge, which are all grounded on the general

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principle of compensation, restoration, and the return of injuries (Eisenberger et al., 2004; Gollwitzer, 2004). Third, the term retribution has been defined as paying back the insulting person for a wrong by a reciprocal and adequate response that targets the restoration of justice and moral standards, whereas revenge includes higher emotional involvement and intensity that exceeds reciprocity (Bradfield & Aquino, 1999; Ho et al., 2002). It has been assumed that retribution may turn into revenge when harming the offender becomes the victim's main objective (Schmid, 2005). Whereas retribution sets a limit on the intensity of the retributive response, revenge is disproportionate and without limits (Nozick, 1981). Fourth, the term retaliation is used mainly to point out the specific empirical proportionality and balance of giving back in the spirit of the talion principle (Gollwitzer, 2004). Fifth, the term vengeance is used synonymously with revenge in several studies and has been used to refer to both a response to a specific event (McCullough et al., 1998; McCullough et al., 2001) and a disposition to vengeful responses (Ysseldyk et al., 2007). In contrast, some authors have explicitly distinguished vengeance from revenge in terms of their accompanying emotions. Whereas the emotions underlying vengeance are thought to be moral indignation and anger elicited by injustice, the main emotion underlying revenge has been suggested to be resentment (Uniacke, 2000). Finally, others have distinguished between a general tendency to revenge and offense-specific revenge (McCullough et al., 1998); both have been shown to be relatively stable over time and situations (Lopes Cardozo, 2003; Orth, 2004). As these examples of related concepts and the partly vague use of the terms show, there is no consensus on a binding conceptualization of revenge and of similar terms in the psychological literature.

To investigate intrapersonal revenge phenomena, however, a clear definition and an elaborated conceptualization of revenge are necessary. In the following, the concept of revenge is therefore defined as it is used in the current work: Revenge can generally be understood as a destructive, emotionally intense, and disproportionate response to experiences of interpersonal transgression or violation of social norms associated with the subjective perception of injustice,

victimization, and contravention of individual rights (Bradfield & Aquino, 1999; Ho et al., 2002; McKee & Feather, 2008; Orth et al., 2003). It can also be characterized in terms of dysfunctional coping (Bradfield & Aquino, 1999; Orth et al., 2003; Orth et al., 2006). Experiencing grave injustice or threats to one's physical or mental integrity and the resulting negative emotional consequences provoke coping reactions (Maes, 1994). The development of feelings and thoughts of revenge after a transgression can thus be regarded as an attempt to cope with more uncomfortable negative feelings such as anxiety, helplessness, or loss of control (Montada, 1994; Orth et al., 2006; Worthington, 2001). Along with this rather general definition of revenge, cognitive appraisal theories of emotions provide a useful approach to conceptualize mental revenge phenomena. According to these theories, revenge may develop on the basis of cognitive evaluations of physiological arousal and negative emotions that result from a transgression (Lazarus, 1991; Scherer, 1997). From this perspective, revenge was conceptualized in the current work as a complex emotion encompassing cognitive, affective, and motivational components (Emmons, 1992). Cognitive processes that may be related to revenge are the perception of unfairness and injustice, the attribution of blame, and the negative appraisal of the event, its consequences, and the perpetrator (Cota-McKinley et al., 2001). The main emotions that have been suggested to underlie revenge are intense anger and hatred (Cota-McKinley et al., 2001; Stuckless & Goranson, 1992). Potential motives and goals driving feelings and fantasies of revenge are, for instance, the relief from negative emotions and pain (Aquino et al., 2001; Stuckless & Goranson, 1992), the restoration of justice, equity, security, power, and self-esteem, the prevention of future injustice, and the validation of moral standards (Cota-McKinley et al., 2001; McCullough et al., 2001).

This definition of revenge as a dysfunctional coping attempt and complex emotion that includes emotional, cognitive, and motivational components provides a useful approach for determining intrapersonal revenge. However, it does not refer to opposing poles that may define revenge; Forgiveness is often seen as the opposite pole of revenge (Mullet et al., 1998), al-

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though this conceptualization is controversially discussed. The question of the specific relation between revenge and forgiveness and the dimensionality underlying these traits was therefore in the focus of the third article presented in this thesis. Before introducing the question of the association between revenge and forgiveness, a theoretical introduction and definition of forgiveness as used in the present study is provided.

Forgiveness

The characterization of forgiveness embraces several elements that are similar to the characteristics of revenge. Just as the current study focuses on the intrapersonal, psychological aspect of revenge following traumatization, forgiveness is also conceptualized as a predominantly intrapersonal phenomenon (Freedman, 1998; McCullough & Worthington, 1994) that needs to be distinguished from the outward-directed interpersonal process of reconciliation (Freedman & Enright, 1996; Fincham, 2000; McCullough & Worthington, 1994). And, similar to revenge, forgiveness can be characterized as an attempt to cope with transgression and its negative emotional consequences that includes emotional, cognitive, and behavior-related components (Enright & Fitzgibbons, 2000; Girard & Mullet, 1997; McCullough et al., 1998). However, revenge exceeds forgiveness in its emotional intensity (Ho et al., 2002). Moreover, in contrast to revenge, forgiveness can be regarded as a conscious and intended process (Horowitz, 2007).

In the psychological literature, forgiveness has been defined according to varying components. Some authors have suggested that forgiveness can be defined as relinquishing the desire for vengeance and associated negative emotions (McCullough et al., 2001; Mullet et al., 1998; Stuckless & Goranson, 1992). This conceptualization, however, neglects another important aspect of forgiveness. In addition to release from strong negative emotions, namely anger, resentment, and feelings of revenge (McCullough, 2000; McCullough et al., 1998), forgiveness encompasses the development of positive feelings and thoughts towards the transgressor, such

as empathy and benevolence (Brown & Phillips, 2005; Fincham, 2000; McCullough, 2000; McCullough & Hoyt, 2002). According to this definition, which informs the current work, forgiveness can be understood as a two-stage process entailing the overcoming of retaliatory responses and the engagement in pro-social empathic responses (Fincham, 2000). Thus, forgiveness can be characterized as empathy-driven and active pro-social transformation of cognitions, affect, and motivation (Fehr et al., 2010; McCullough et al., 1998).

This conceptualization of forgiveness implies that although forgiveness encompasses release from negative vengeful emotions (McCullough et al., 1998), it cannot be regarded as the pure absence of revenge, which begs the question of the specific relation between revenge and forgiveness. This question is addressed in the following section, in which theoretical approaches and findings from previous studies that are relevant to the hypotheses tested in the third article in this thesis are presented and discussed.

The relation between revenge and forgiveness

The relationship between revenge and forgiveness is a frequently debated topic in the recent psychological literature (Brown, 2003). One could intuitively assume that forgiveness is the opposite mental state of being vengeful, and some researchers have indeed suggested that the two represent opposite ends of one psychological dimension (Mullet et al., 1998). However, as mentioned in the previous section on forgiveness, conceptualizing revenge and forgiveness as opposite mental states negates the important pro-social aspects of the forgiveness concept (Ho et al., 2002). Given the definition of forgiveness as empathy-driven and pro-social transformation of emotions and thoughts that exceeds the pure absence of revenge, it seems plausible that intrapersonal revenge and forgiveness represent distinct mental phenomena (Brown, 2003; Brown, 2004). In terms of their conceptualization as coping mechanisms, revenge and forgiveness can thus be seen as distinct mental attempts to cope with injustice and harm (Bradfield & Aquino, 1999). Findings from previous studies support this view. It has been reported,

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for instance, that the relation between revenge and forgiveness is of only moderate strength (Wade & Worthington, 2003; Ysseldyk et al., 2007). Moreover, previous findings indicate that the opposite mental state of forgiveness seems to be unforgiveness rather than revenge (Wade & Worthington, 2003). Unforgiveness has been defined as a mental state of not forgiving an interpersonal transgression, characterized by negative emotions such as resentment, grudge, hostility, and anger, and little motivation to reduce these negative emotions (Berry et al., 2005; Neto & Mullet, 2004; Worthington & Wade, 1999). Unforgiveness may hence provide the psychological basis for the development of revenge but must not be confused with it. Not forgiving does not necessarily result in a desire for revenge, and not seeking revenge does not necessarily imply forgiveness (Brown, 2003). Although related, the dimensionality underlying intrapersonal revenge and forgiveness seems more complex than just being opposite mental states.

Based on this assumption, it is also plausible that revenge and forgiveness differ in their association with PTSD. If revenge and forgiveness are distinct phenomena, it is conceivable that although revenge has a symptom-enhancing impact on PTSD, forgiveness does not necessarily have a health-improving impact on PTSD symptomatology. As mentioned in the introduction, the question of the relation between revenge and forgiveness and the association of each with PTSD is of clinical relevance when comparing the benefits of interventions promoting forgiveness and those reducing revenge in trauma therapy. To date, however, little is known about the specific impact of forgiving a traumatic transgression on PTSD. The few existing findings on the relation between forgiveness and PTSD are summarized in the following section.

The relation between forgiveness and PTSD

Although forgiveness has been frequently shown to promote mental and physical health (Berry et al., 2001; Freedman & Enright, 1996; Thompson et al., 2005; Thoresen et al., 2000; Lawler et al., 2003; Witvliet et al., 2001), most studies have investigated the impact of forgiveness on mental health only in the context of slight harms and close relationships. Few have focused on forgiveness in the aftermath of traumatic events and its relationship with PTSD. In a sample of Palestinian and Jewish Israeli exposed to terror, the inability to forgive was positively associated with severity of PTSD (Hamama-Raz et al., 2008). Likewise, in a sample of combat veterans, dispositional forgiveness was negatively related to PTSD (Witvliet et al., 2004). Among victims of the apartheid era in South Africa, PTSD was significantly positively related to non-forgiving responses and irreconcilability (Kaminer et al., 2001). Finally, experiential forgiveness has been reported to partially mediate the relation between trauma exposure and PTSD symptoms in a sample of traumatized college students (Orcutt et al., 2005). In sum, these findings indicate a protective, health-improving impact of forgiveness on PTSD symptomatology.

However, nothing is known from these studies about the mechanisms that underlie the reported positive effect of forgiveness on PTSD or the specific impact of forgiveness beyond the reduction of revenge. Findings from other studies suggest that the health-improving effect of forgiveness is mainly attributable to the reduction of the arousal level (Witvliet et al., 2001), of anger (Orth et al., 2008), and of stress (Lawler et al., 2005). Yet these factors are the same as those that have been said to mediate the relation between revenge and PTSD (Orth et al., 2006; Worthington, 1998). It is therefore conceivable that the main health-improving impact of forgiveness stems from the release of negative feelings and thoughts of revenge rather than from the development of positive, pro-social emotions and cognitions towards the transgressor. For this reason, the third article included in this work also investigated the explanatory power of forgiveness for current PTSD symptoms beyond the explanatory power of revenge. It thus pro-

vides new knowledge on the little investigated association between forgiveness and PTSD in victims of trauma.

The current work

In sum, the three articles presented in this thesis thematically interweave the different topics deduced in the previous sections. The conducted study empirically investigated the relation between intrapersonal aspects of revenge and PTSD symptoms as developed in the aftermath of traumatization by political imprisonment, as well as the dimensionality underlying revenge and forgiveness after trauma, and surveyed the predictive power of forgiveness for PTSD symptoms beyond the effects of revenge. All these specific issues were neglected or only partially investigated in recent trauma research or yielded inconsistent results.

The three articles included in this thesis are presented in turn. The thesis concludes with an overall discussion of the theoretical considerations and, most important, the empirical findings of the investigation. Limitations of the study as well as implications for future research, trauma therapy, and societal measures are also discussed. Before turning to the presentation of the articles, a short summary of each is given below.

Overview of the three presented articles

This doctoral thesis comprises three articles on the topic of intrapersonal revenge after trauma and its relation to PTSD and to forgiveness.

The first article is a theoretical overview of current knowledge and research on revenge. It provides detailed information on intrapersonal and external variables that have been reported to be associated with revenge. Published as a theoretical excursus on revenge in a professional book on Posttraumatic Embitterment Disorder (PTED), although embitterment and PTED are not in its focus, the article presents a self-developed revenge model that visualizes the assumed relation between revenge and PTSD, and emotional, cognitive, and motivational components

that are hypothesized to underlie revenge. The proposed model is purely theoretical and was not intended to be tested in the present study.

The second article addresses the specific contribution of intrapersonal aspects of revenge to the prediction of current PTSD symptoms. Findings from a sample of former East German political prisoners show that feelings and cognitions of revenge developed in the aftermath of trauma explain significant incremental variance in current self-reported and in clinician-rated PTSD symptoms, even when controlled for standard predictive variables for PTSD. Revenge intentions, in contrast, were not predictive of current PTSD.

The third article covers the specific relation between revenge and forgiveness after traumatization by political imprisonment and assesses the association between factors identified to underlie revenge and forgiveness and PTSD. Unlike in previous studies, current revenge and forgiveness phenomena were conceptually separated from general attitudes toward revenge and forgiveness. Results presented in this article support the assumption that revenge and forgiveness are distinct mental phenomena. Three factors were identified as underlying current revenge and forgiveness, and three other factors as underlying general attitudes. It was further shown that, in contrast to revenge, forgiveness did not contribute to the prediction of PTSD.

ARTICLE I:
REVENGE AFTER TRAUMA: THEORETICAL OUTLINE

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Abstract

This chapter focuses on revenge, a somewhat neglected psychological phenomenon often occurring in the context of embitterment that has been observed to be associated with traumatization and Posttraumatic Stress Disorder. Recent theoretical approaches to and research findings on revenge and its specific relationship to embitterment phenomena are summarized, and therapeutic implications are discussed. The main objective of the chapter is to present a theoretical process model predicting the development of feelings and thoughts of revenge after traumatic experiences and their impact on the maintenance of posttraumatic symptoms. Based on a review of the psychological revenge literature, we identify potential emotional, cognitive and motivational mediators of the relationship between revenge and PTSD.

Introduction: Embitterment and revenge

This chapter can be understood as an excursus from the topic of embitterment, addressing psychological aspects and processes of revenge phenomena after traumatization. Why is it necessary to consider revenge in the context of embitterment? Although it represents an independent psychological phenomenon, revenge seems to be related to embitterment in several ways. The main link between the two concepts is the occurrence of a traumatic experience and the development of dysfunctional mental reactions and symptoms. Revenge is often mentioned together with embitterment, either as a co-occurring affective state or as a motive underlying embitterment that has been described as “the urge to fight back” (Linden et al., 2004). It even features in the definition of the proposed Posttraumatic Embitterment Disorder (PTED), which states that “... patients ... even smile when engaged in thoughts of revenge” (Linden, 2003; Linden et al., 2004). Generally, embitterment is regarded as a possible psychological reaction in the aftermath of traumatic life events that is associated with the perception of injustice and the violation of central values, and that implies a self-perception of being victimized and helpless (Linden, 2003). Likewise, revenge is seen as a response to negative experiences, such as interpersonal injuries, the violation of social norms (McKee & Feather, 2008), and traumatization. Like embitterment, it is associated with subjective experiences of injustice, victimization, or violation of personal rights and claims (Orth et al., 2003); additionally, it can involve the experience of humiliation or threat to the sense of identity (Frijda, 1989).

Of course, unwanted, uncontrollable, and intense feelings and fantasies of revenge go far beyond bitter thoughts (Horowitz, 2007), but nevertheless there may be some substantive overlap between the two constructs, as demonstrated in this chapter. Both embitterment and revenge are related to emotional arousal and are associated with aggressive tendencies (Linden et al., 2004; Milgram et al., 2006). However, it is unclear why either revenge or embitterment develops after traumatic experiences, whether the two may also exist in parallel, and which specific processes influence the occurrence of revenge after trauma. To date, revenge has been

widely neglected in the psychological research on disorders following trauma. Although both psychotherapists and researchers are familiar with the phenomenon of revenge after trauma (Horowitz, 2007; Orth et al., 2003; Rose, 1991), there has been little systematic investigation of the specific processes and factors associated with revenge. This chapter represents a first step toward filling this gap in the research.

The chapter is organized as follows: After introducing the concept of revenge in the context of trauma, we outline some different conceptualizations of and theoretical approaches to revenge and provide a definition of the concept. Subsequently, we present our theoretical model of the relationship between PTSD and revenge as well as the processes mediating this connection. In this context, we draw on the psychological literature to establish the empirical basis for the variables and trajectories included in the model. Furthermore, we consider the relationship between revenge and health and discuss therapeutic implications and research perspectives. The specific relation between revenge and embitterment will be discussed at the outset and closure of the chapter.

Revenge in the context of trauma

Psychological research has identified a variety of factors that influence the development and maintenance of symptomatology in the context of disorders resulting from trauma, especially the Posttraumatic Stress Disorder (PTSD). Together, these variables, which include gender, age of traumatization, type of trauma, and subjective trauma dose (Orth et al., 2003; Orth et al., 2006), are able to explain some, but by no means all, of the variance in PTSD. We suggest that revenge may be an important additional factor in the prediction of posttraumatic symptom severity and maintenance that enhances the predictive power of the standard victimological variables. Given that the strongest influencing variables have already been established, what is the value of identifying more factors contributing to the maintenance of PTSD? The answer to this question is simple but quite compelling: Even if thoughts and feelings of revenge prove to

be only a weak predictor of PTSD maintenance, they present psychological processes that can be therapeutically targeted and treated, whereas gender, age, and trauma-dose are unchangeable facts.

Next to traumatic experiences, feelings and thoughts of revenge may result from non-traumatic, adverse everyday life situations, such as interpersonal conflicts in close relationships (McCullough et al., 1998; McCullough et al., 2001), experiences of school bullying (Carlisle & Rofes, 2007), or workplace conflicts (Aquino et al., 2001; Bradfield & Aquino, 1999). In this chapter, however, we focus on revenge phenomena resulting from serious and traumatic transgressions. A variety of studies have addressed revenge in the context of severe traumas such as civilian atrocities, political violence, and war. Feelings of revenge are often observed after exposure to war or military aggression, as the following examples show. One year after the end of Kosovo War, approximately 50% of a sample of war-exposed Kosovar Albanians reported strong feelings and fantasies of revenge. Furthermore, nearly 40% stated that they might act on their fantasies (Lopes Cardozo et al., 2000; Lopes Cardozo et al., 2003). In post-war Afghanistan, 20% of interviewees disabled during the war reported a desire for revenge, and almost 30% said that they might act on their desire (Lopes Cardozo et al., 2004). Former Ugandan and Congolese child soldiers reported feelings of revenge against the person or group they considered their enemy (Bayer et al., 2007). The desire for revenge was also observed as an emotional response arising from indirect exposure via the media to the terrorist attacks of September 11th, 2001 (Brown et al., 2008).

Revenge phenomena may also result from civil traumatization, such as natural catastrophes or crime. For instance, after the 1998 hurricane in Nicaragua, more than half of the adolescent victims surveyed voiced thoughts of revenge towards their government, which they considered to have provided insufficient warnings and emergency aid (Goenjian et al., 2001). Similarly, three months after a severe earthquake in Greece in 1999, the children and adolescents interviewed reported thoughts of revenge (Roussos et al., 2005). Furthermore, victims of crimes

such as rape, assault, robbery, and deprivation of liberty have been reported to experience intense and persistent feelings of revenge, even years after the offense (Orth, 2003; Orth et al., 2006). Colombian and Peruvian victims of organized violence, for example, reported feelings of revenge and desire for retaliation (Elsass, 2001).

In sum, revenge seems to be a frequent response to perceived harm and injustice and an important psychological phenomenon in the context of traumatization. Nonetheless, none of the studies cited above examined revenge in detail or considered the underlying mechanisms. Rather, they simply noted revenge to be concomitant with other psychological constructs or mental disorders. Most of the investigations used only a few items or even only one single question to tap the occurrence of revenge. To date, no studies have investigated the psychological function, intraindividual processes, or specific preconditions of revenge in the context of trauma. Additionally, most previous studies have addressed revenge in the context of mass trauma, such as war or natural disasters. To our knowledge, few studies have investigated revenge in victims of rape or interpersonal violence, for example, although it is known from the therapeutic context that revenge phenomena seem to be relevant in these trauma types.

Psychological research (and Psychoanalytic research, in particular) offers a variety of related theories and concepts. But in fact, there are more conceptions of revenge than it is possible to cover here. This chapter is therefore restricted to those conceptions that are relevant to the proposed process model of revenge. The following section offers a theoretical explanation for the occurrence of revenge after trauma and explores the impact of revenge on the individual.

Revenge as a coping strategy

Recent theorizing describes revenge as a possible reaction to negative or traumatic experiences in the sense of a coping strategy (Bradfield & Aquino, 1999; Orth et al., 2003). As victimization commonly is perceived as a threat to physical and mental health and as an experience of grave injustice, it provokes coping reactions (Montada, 1994; Orth et al., 2006). Some

authors have understood revenge as a purely actional coping strategy and conceptualized it in terms of behavior (Gollwitzer, 2004). However, victimization may also trigger various emotional and cognitive processes, including experiencing feelings of revenge or fantasizing and ruminating about revenge – or, alternatively, accepting the injustice, cognitively reframing the event and its consequences, or suppressing or denying one's emotions (Berry et al., 2005; Worthington, 2001).

Although feelings and thoughts of revenge have been cited as an essential motivator for social behavior (Stuckless & Goranson, 1992), they are not necessarily acted out. To date, revenge research has found no significant relationships between self-reported feelings and cognitions of revenge and behavioral measures (Greer et al., 2005). Additionally, the number of crime victims who actually put revenge into praxis is unknown (Orth et al., 2006). Our focus is not on revenge behavior, but on feelings and thoughts of revenge as inner psychological processes that, for example, aim to restore the traumatized individual's shattered self-concept and integrity (Bayer et al., 2007; Bradfield & Aquino, 1999; Cota-McKinley et al., 2001).

Following the coping approach, we characterize revenge as an attempt to manage the negative personal sequelae of traumatic experiences. In the context of coping and restoration of self-concept and self-worth, it seems that revenge emotions and cognitions can be regarded as useful reactions to trauma that positively impact the mental processes triggered by injury and suffering. Indeed, feelings or fantasies of revenge have benefits for the individual, by providing satisfaction, reassurance, and experience of power and control. A victim imagining the suffering of the perpetrator may feel relieved from the enduring experience of injustice, helplessness, and powerlessness by restoring justice and power – at least in his or her mind. An empirical study, albeit not related to traumatization, showed that members of the German armed forces experienced positive emotions and reduced hostility when they imagined their superiors being harmed (Montada & Boll, 1988). Furthermore, an experimental study revealed that imagined and symbolic revenge (stabbing a voodoo doll) after hypothetical cheating in a romantic rela-

tionship, led to reduced aggression. Note, however, that the relieving effect of revenge was not specific to this aggressive reaction, as non-aggressive conflict solutions showed the same aggression-reducing effect (Denzler et al., 2008). Thus, revenge phenomena do not seem to be negative for the victim per se. Rather, they seem to be relatively unproblematic and useful emotional coping reactions to victimizations, at least in the short run (Davenport, 1991; Orth et al., 2003).

However, there is some evidence that feelings and cognitions of revenge that persist over longer periods do become dysfunctional (Ehlers, 1999). This dysfunctionality may stem from the development of negative and stressful emotions like shame or blame (Horowitz, 2007). An experimental study revealed fearful anxiety and remorse to be the strongest emotions reported after punishing a cheat, and positivity to be the weakest (Worthington et al., 2007). Additionally, revenge as a coping strategy does not help to restore feelings of security, a sense of control, or self-esteem in the long-run. Therefore, it does not fulfill the motives driving it and can not be functional or constructive in the long-term after trauma (Maes, 1994). Furthermore, the ruminative character of revenge (Berry et al., 2005; Ysseldyk et al., 2007) may negatively impact attention and concentration. The victim's revengeful attitude may alienate the social environment, leading to social exclusion. Finally, feelings and thoughts of revenge may prevent the victim from reaching closure on the trauma, resulting in hopelessness (Ehlers, 1999), and may contribute to the maintenance of PTSD symptoms and other mental and physical disorders, as described below. In conclusion, long-term feelings and thoughts of revenge after trauma seem to constitute a rather dysfunctional coping mechanism that requires treatment.

Before presenting our theoretical model of revenge, we need to define the term and to specify what exactly we mean by revenge in this chapter. The next section offers a practical definition of revenge as we understand it.

Toward a definition of revenge

To date, there is no consistent and widely accepted definition of revenge in the psychological literature, and there seems to be some confusion about the use of the term revenge and of related terms. On the one hand, revenge is commonly equated with other concepts; on the other, very fine distinctions are made between it and related concepts. For example, the terms *vengeance* and *revenge* are often used as synonyms, being applied to both the response to a specific event (McCullough et al., 1998; McCullough et al., 2001) and a disposition or personality trait (Ysseldyk et al., 2007). However, some authors explicitly differentiate between vengeance and revenge, stating that the terms should be distinguished according to their accompanying emotions: feelings of either resentment (desire for revenge) or moral indignation and anger (vengeance) (Uniacke, 2000). Other, similar terms are in circulation in the revenge literature. For instance, *retribution* accentuates the reciprocal and fitting quality of the response and is driven by motives like restoration of justice and moral standards. *Retaliation* mainly focuses on the proportionality of the reaction to the wrong in the tradition of the talion principle (Gollwitzer, 2004).

We define *revenge* as a destructive response to a real or perceived injustice or serious injury, which is usually disproportionate to the severity of the offense (Nozick, 1981). This special intensity, exceeding reciprocity, and the high emotional involvement (Bradfield & Aquino, 1999, Ho et al., 2002) are important defining characteristics of revenge that distinguish it from other emotional responses to serious offenses. Additionally, the literature differentiates between *current feelings of revenge* (state) resulting from a specific offense and a more generalized propensity to respond to personal assaults with revenge in the sense of a personality trait, sometimes called *vengefulness*. In this chapter, we do not limit our use of the term *revenge* to a current state, but conceptualize it as being stable over time and situations in the sense of a trait. Revenge thus can be further characterized as a relatively stable propensity to harbor feelings or thoughts of revenge, which may be related to a higher probability of acting on these feelings

(McCullough et al., 2001; Stuckless & Goranson, 1992; Ysseldyk et al., 2007). Several studies have shown stable individual differences in revenge scores across experimental conditions, thus supporting the conceptualization of revenge as a trait (McCullough et al., 2001; McCullough & Hoyt, 2002).

Next to *revenge*, we further use the term *revenge phenomena* to refer to the *feelings and thoughts of revenge* that contribute to the emotional and cognitive components hypothesized to underlie revenge. The following section provides a more detailed explanation of this definition of revenge as an emotion informed by cognitive processes.

Revenge as a complex emotion

Cognitive appraisal theories of emotions state that emotions develop on the base of physiological arousal that is followed by cognitive evaluations and attributions of the assumed causes of the perceived arousal (Lazarus, 1991; Scherer, 1997). From this perspective, revenge can be conceptualized as a complex emotion encompassing diverse cognitive and affective components that arises from specific preconditions and motives (Emmons, 1992).

Cognitive appraisal processes can be regarded as a necessary condition for the development of revenge after a transgression. Following the perception of unfairness and injustice (Cota-McKinley et al., 2001; Stuckless & Goranson, 1992), evaluations of diverse event- and perpetrator-related variables (e.g., blame attributions, appraisal of the negative sequelae of the event, appraisal of the perpetrator's behavior in the aftermath of transgression) inform the development of revenge phenomena, as we discuss later in this chapter. The main *emotions* associated with perceived injustice and injury are intense anger and hatred toward the perpetrator (Cota-McKinley et al., 2001; Stuckless & Goranson, 1992) as well as feelings of bitterness over the negative experience. These emotions are addressed in section on emotions as mediators of the PTSD–revenge relationship. The *motivational* component of revenge refers to the victim's underlying motives and goals. Revenge is aimed at inflicting damage or discomfort on the party

judged to be responsible for the victim's suffering and at providing relief from the experience of negative feelings and pain (Aquino et al., 2001; Stuckless & Goranson, 1992). Possible motives for revenge are restoring justice, equity, security, power, and self-esteem, preventing future injustice, and validating moral standards by punishing the perpetrator (Cota-McKinley et al., 2001; McCullough et al., 2001).

The definition of revenge as a complex emotion comprising emotional, cognitive, and motivational components forms the basis of the process model presented in the next section. The aim of the model is to map out intraindividual processes that we hypothesize to contribute to the development of revenge after trauma. With a focus on selected variables, our aim is to organize important empirical findings related to trauma and revenge and to explain the main processes involved.

A theoretical process model of revenge

Our discussion of revenge and its impact on psychological health focuses on PTSD as one of the most relevant disorders following traumatization. We hypothesize the association between PTSD and revenge to be mediated by various emotions and cognitions (see *Fig. 1*).

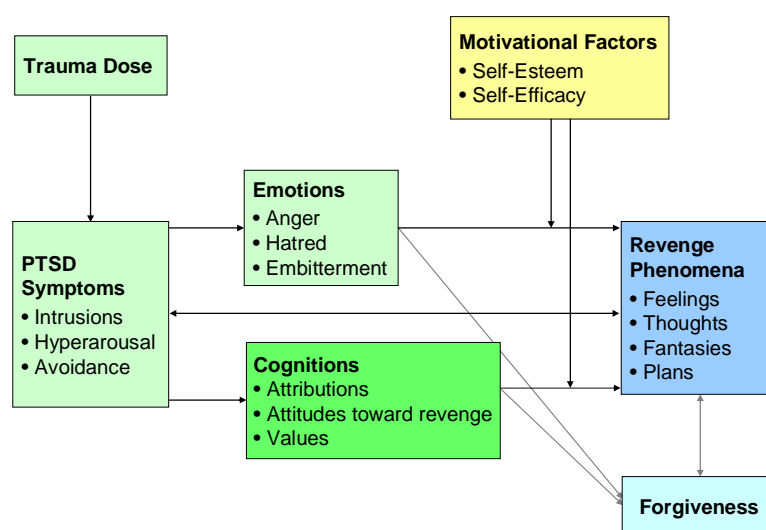


Figure 1 Process model of revenge

Because revenge is thought to be outward-directed and other-related, rather than inward-directed and self-related, the model focuses on externally directed emotions like anger rather than on internalizing emotions like shame or fear. First, PTSD symptoms are hypothesized to directly influence the extent of specific externalizing emotions—mainly anger, but also hatred and bitterness—which are in turn expected to determine the magnitude of feelings or thoughts of revenge. Second, we hypothesize the relationship between PTSD and feelings of revenge to be mediated by specific cognitions, namely general attitudes toward revenge, personal values, and appraisal of the trauma and its sequelae. Furthermore, we hypothesize that these two pathways are moderated by self-efficacy and self-esteem as behavior-modulating personality variables.

Interrelationship between PTSD and revenge phenomena

PTSD is one of the most common psychiatric disorders following overwhelming psychic trauma. We propose that although PTSD is classified as an anxiety disorder, revenge phenomena must not be neglected in association with PTSD. In fact, there is much evidence for a relationship between revenge and PTSD, as the following examples illustrate. It has been reported that persistent feelings or thoughts of revenge predict PTSD severity and maintenance of PTSD symptoms in various trauma-groups, such as survivors of the Kosovo War (Lopes Cardoso et al., 2003), Greek earthquake survivors (Roussos et al., 2005), former Ugandan and Congolese child soldiers (Bayer et al., 2007), and Nicaraguan hurricane victims (Goenjian et al., 2001) mentioned earlier in this chapter. Data from German crime victims (Orth et al., 2003; Orth et al., 2006) suggest that the correlation between revenge phenomena and PTSD increases over time. Based on their clinical experience, many psychotherapists report that cultivating feelings and fantasies of revenge is self-defeating in the long-term and hampers recovery (Horowitz, 2007; Lamb, 2005). Additionally, PTSD severity has been observed to be positively associated with the difficulty or inability to forgive (Hamama-Raz et al., 2008; Kaminer et al., 2001).

According to the theory of associative networks in memory (Bower, 1981), traumatic experiences produce posttraumatic fear structures (Foa & Kozak, 1986; Riggs et al., 1992) that link typical thoughts, memories and reactions with each other. It has been suggested that these fear structures are closely linked to anger structures which are as well activated whenever memories or intrusions activate the fear structures (Chemtob et al., 1997). As a consequence, anxiety provoking intrusions or memories of a traumatic event may also trigger aggressive or retaliatory components of the network, such as vengeful ideas or feelings of revenge. Furthermore, it has been stated that the activation of and the focus on anger might be an attempt to avoid the more uncomfortable feelings of anxiety (Chemtob et al., 1997; Feeny et al., 2000; Foa et al., 1995; Riggs et al., 1992). This leads to the suggestion that feelings or thoughts of revenge, similar to anger, might serve the reduction of fear (Foa et al., 1995).

Furthermore, given the well-established relationship between PTSD and feelings of anger (see next section), we hypothesize comparable mechanisms between PTSD and revenge. Some authors suggested that posttraumatic intrusions directly lead to posttraumatic hyperarousal and to the enhancement of anger (Chemtob et al., 1997; Schützwohl & Maercker, 2000). It has been shown that arousal level is associated with both anger (Orth et al., 2003) and retaliatory response (Witvliet et al., 2001; Zechmeister et al., 2004). Following these findings, revenge also might result from a related constellation of symptoms: Intrusions and hyperarousal may cause anger, which under certain conditions (e.g., specific cognitive appraisal, intrapersonal preconditions) may lead to feelings of revenge that on their part might be PTSD maintaining.

Although many studies have confirmed the relationship between PTSD and feelings of revenge, the direction of the relation has not yet been examined. It remains unclear whether revenge phenomena determine the development and maintenance of PTSD symptoms or whether PTSD produces feelings and thoughts of revenge. Some authors hypothesize that feelings of revenge do not contribute to the development of PTSD, but are probably an important

factor influencing the course and maintenance of its symptoms. For example, the relationship between revenge and PTSD has been found to be moderated by time since victimization (Orth et al., 2006), with feelings and thoughts of revenge becoming increasingly maladaptive and contributing to symptom maintenance with time. In contrast, other authors have hypothesized that posttraumatic stress impairs the ability to deal with and overcome feelings of revenge (Bayer et al., 2007). More research is thus needed to specify the direction of influence between PTSD and revenge phenomena.

The revenge model proposed in this chapter hypothesizes a reciprocal relationship between PTSD and psychological revenge phenomena. On the one hand, we hypothesize the specific symptom pattern of PTSD and related problems (e.g., subjective suffering, mitigated quality of life, feelings of anger and hatred) to activate feelings of revenge. Accordingly, we expect a decrease in psychological symptoms to reduce the need for revenge (Baumeister et al., 1998). On the other hand, we hypothesize feelings and thoughts of revenge to sustain the symptomatology and to be detrimental to the recovery of victims (Roussos et al., 2005). In the following sections, we consider specific emotions and cognitive processes that we hypothesize to mediate the relationship between PTSD and revenge.

Emotions as mediators of the PTSD–revenge relationship

Anger. Anger is often considered to be the main emotion underlying feelings of revenge. Anger is commonly defined as an uncomfortable negative emotional state that results from an aversive experience or injury and that is associated with physiological arousal and negative appraisal (Davenport, 1991). Several researchers have reported substantial positive correlations between anger and revenge – for instance, in samples of prison inmates, clinical outpatients, workplace recruits, and college students (DiGiuseppe & Froh, 2002; Stuckless et al., 1995). Similarly, anger hostility (anger together with other negative emotions) has been found to predict revenge motivations in university students 2.5 years after a serious transgression (Maltby et

al., 2008). Experimental studies have confirmed these results. For example, subjects who experienced strong anger retaliated in reaction to an arbitrary verbal attack when they had the chance to do, whereas subjects experiencing low anger did not (Atkinson & Polivy, 1976).

Of course, there is clear overlap in the content of anger and feelings of revenge. Both involve similar cognitive processes (see *Cognitions as mediators of the PTSD–revenge relationship*), such as a perception of injustice, negative appraisal of the event, interpretation of the event as intentional, and rumination (Barber et al., 2005; Berry et al., 2005; Maxwell et al., 2005). Nevertheless, anger and revenge differ from each other in some important respects. Feelings of revenge always relate to a specific damage or trauma (Orth et al., 2003), whereas anger seems to be a more general emotion that may be unspecific and undirected or self-related and -directed. Whereas feelings of revenge tend to entail aggressive and destructive tendencies (Harris & Thoresen, 2005), anger has many possible modes of expression and may also result in non-aggressive or even constructive reactions (Stuckless et al., 1995).

On the other hand, anger has repeatedly identified as a concomitant of PTSD and as PTSD-stabilizing (Ehlers et al., 1998; Feeny et al., 2000), and it is known to mitigate therapy effectiveness (Foa et al., 1995; Freyd, 2002). Traumatized people often experience heightened anger (Kotler et al., 2001) that can result in increased anger-expression behavior. A meta-analysis of 39 studies clearly confirmed the relation between anger and severity of PTSD symptoms (Orth & Wieland, 2006). For example, traumatized former East German victims of political imprisonment reported levels of trait anger significantly higher than the test norms of community samples, and victims diagnosed with PTSD showed higher trait anger than did those without PTSD (Orth et al., 2003). The relationship between anger and PTSD has also been confirmed in war and combat veterans (Novaco & Chemtob, 2002), survivors of violent trauma (Connor et al., 2003), survivors of motor vehicle accidents (Ehlers et al., 1998), and female victims of sexual assault (Feeny et al., 2000). Moreover, psychological research has shown a

positive relationship between the severity of trauma and the extent of anger experience (Riggs et al., 1992; Schützwohl & Maercker, 2000).

Some authors pointed out that the correlation between anger and PTSD may be artificial in that anger itself is connected to irritability and outbursts of anger (Novaco & Chemtob, 2002), which are a diagnostic criterion for PTSD according to DSM-IV (Sass et al., 2003). In fact, a common factor of anger and PTSD is the heightened arousal involved in PTSD symptomatology, which can be regarded as a regulatory deficit (Chemtob et al., 1997; Feeny et al., 2000; Novaco & Chemtob, 2002). However, it has been statistically demonstrated that the relationship does not decrease substantially when the anger and irritability items are removed from PTSD scales (Novaco & Chemtob, 2002; Orth & Wieland, 2006).

Hatred. Hatred is another emotion hypothesized to be associated with revenge phenomena. Hatred, or hate, can be regarded as an intense emotion of extreme dislike and hostility directed against a specific person or group (Allport, 1971). Here again, it seems reasonable to distinguish between a temporary emotional state of hate and the enduring disposition to hate. Hatred is thought to include various destructive components, such as seeking distance, devaluation, and diminution of the hated person (Sternberg, 2003), and to be more likely if the person feels inferior, injured, or powerless (Montada & Boll, 1988). Like anger, hatred is thought to have a self-affirming root, in the sense that renouncing feelings of hatred may give way to a self-perception as being vulnerable and unprotected (Davenport, 1991). Hatred is also thought to be an emotion masking fear and to be a way of dealing with threatening memories (Freyd, 2002). The psychoanalytic literature describes hatred as the most serious and complex affect directed against oneself or against others that is intensified by unconscious older hatred and probably underlies revenge (Böhm & Kaplan, 2009).

Hatred (especially trait hatred) has been shown to be linked to both PTSD and feelings of revenge. It seems plausible that the externally directed emotion of hatred (as opposed to self-hate) contributes to the occurrence of revenge phenomena; indeed, evidence for this relation-

ship has been found in a variety of psychological studies (Cota-McKinley et al., 2001; Stuckless & Goranson, 1992). For example, about 90% of the interviewed survivors of the Kosovo War reported strong feelings of hatred toward the Serbs shortly after the end of war. One year later, about 60% still felt hatred. Additionally, the magnitude of hatred and the desire for revenge were found to predict psychiatric symptoms in this post-war population (Lopes Cardozo et al., 2000; Lopes Cardozo et al., 2003). Likewise, more than 80% of post-war Afghanistan adolescents and adults reported high or even extreme feelings of hatred (Lopes Cardozo et al., 2004). Finally, Colombian slum children exposed to considerable violence asked to make moral judgments about criminal behavior in different given contexts justified stealing or violent behavior in terms of retribution and hate (Posada & Wainryb, 2008).

Embitterment. As stated in the introduction, revenge and embitterment can be regarded as related concepts that show some overlap. We hypothesize that embitterment may be an important emotion underlying revenge phenomena. The term embitterment is mainly used to describe a chronic emotion in the sense of a trait or a chronic disruption following a critical life event or psychological distress, whereas bitterness can be characterized as specific current and transient emotional status. Embitterment has been related to various other negative emotional states, such as hostility, grudge, anger, disdain, helplessness, and resignation (Linden et al., 2004), and has been described as involving persistent feelings of being revengeful but helpless (Linden, 2003). It is thought to be associated with externally directed behavioral tendencies, such as venting anger and aggressive or vengeful inclinations (Linden et al., 2004; Linden et al., 2007). To date, no direct statistical correlations between embitterment/bitterness and revenge have been reported in the psychological literature, although the conceptualization of the Post-traumatic Embitterment Disorder (PTED) refers to thoughts and fantasies of revenge (Linden et al., 2004), and the emotional spectrum of PTED is described to entail thoughts and desires of revenge (Linden et al., 2007).

A relationship between the two concepts seems obvious in the context of traumatization, however. Both result from a negative exceptional experience and involve the subjective perception of injustice, personal suffering, and a lack of acknowledgement. Both phenomena seem related to injured self-esteem, distrust, and the external attribution of blame, as well as to feelings of anger and hatred, and to a loss of goals and functions in the sense of failed coping. Furthermore, both embitterment and revenge focus more on the past than on the present or future. However, one essential difference between the two constructs needs to be mentioned: Whereas embitterment results from an event that is not anxiety-provoking and life-threatening, but from an exceptional, though normal, negative life event like a workplace conflict, unemployment, or divorce, revenge tends to be reported in the context of serious traumatic events that threaten life or physical integrity and that elicit intense fear and helplessness (DSM-IV; Sass et al., 2003). In conclusion, trauma severity may be one factor among others that influences the development of either embitterment or revenge, whereby the latter may include feelings of bitterness.

We thus propose that embitterment is one of the emotions potentially underlying revenge phenomena. A person who feels embittered because of an experienced injustice and suffering may develop feelings or fantasies of revenge if the embitterment is accompanied by other intense negative emotions (e.g., hatred or anger) and specific motives and cognitions (e.g., attribution of blame, desire for relief from an uncomfortable state of helplessness).

Cognitions as mediators of the PTSD–revenge relationship

Negative appraisal. Negative evaluations of the offender, the offense, and its sequelae appear to be a basic condition for revenge development in the context of PTSD (Aquino et al., 2001; Bradfield & Aquino, 1999). Specific appraisal processes include considering the offense morally wrong (Orth, 2004) and attributing blame, responsibility, and intentionality (Bradfield & Aquino, 1999; Eaton et al., 2006). Other cognitions presumably involved in revenge processes include the attribution of offense severity (Bradfield & Aquino, 1999; McCullough et al.,

1998), the perception of one's own suffering, and the evaluation of the perpetrator's behavior in the aftermath in terms of acknowledgement of blame, repentance, and apology (Bradfield & Aquino, 1999).

Attitudes toward revenge. Generally positive versus negative attitudes toward revenge are thought to be another important factor in the development of revenge phenomena after a transgression. A fundamentally positive attitude toward revenge can be regarded as crucial for the emergence of feelings and fantasies of revenge and has been shown to increase both rumination about revenge and the probability of actually taking revenge (Emmons, 1992; Stuckless & Goranson, 1992). Adopting more pro-social attitudes seems necessary for people to overcome feelings of revenge and develop forgiveness (Ysseldyk et al., 2007). A relationship between attitudes toward reconciliation and PTSD has also been reported—for example, among adult survivors of the Rwandan genocide (Pham et al., 2004). However, there has as yet been little research on attitudes toward revenge. In particular, the question of whether pre-existing positive attitudes toward revenge promote the development of feelings of revenge after traumatization or whether posttraumatic stress symptoms influence individual attitudes toward revenge remains unanswered.

Just world belief. The belief in the justice of the world is another cognitive factor considered to be relevant in the context of revenge. The Belief in a Just World (BJW) can be characterized as the individual conviction that people get what they deserve. BJW helps people to perceive the social world as orderly, rule-driven, stable, and predictable. It has been shown to be related to anxiety and to stress (Janoff-Bulman, 1989; Lerner, 1980), as well as to the ability to find sense in negative events (Kaiser et al., 2004), and to motivation, self-efficacy, self-esteem, psychological well-being, and the individual perception of control (Janoff-Bulman, 1989). Experiencing a traumatic event can shatter the BJW, and feelings of revenge may emerge from the resulting attempts to restore a sense of justice. In this sense, revenge may serve to protect or restore the BJW and the principle of moral order (Lerner, 1980; McCullough et al.,

2001). For example, a prospective study revealed that BJW prior to the terrorist attacks of September 11th, 2001, was positively correlated with the desire for revenge after the attack (Kaiser et al., 2004). This finding indicates that violation of a strong BJW may result in higher individual stress, which in turn leads to increased feelings and thoughts of revenge.

Value orientations. Basic human value orientations also seem to play an important role in relation to revenge. Severe transgressions communicate disrespect and depreciation not only toward the victim, but also toward his or her moral values, which are relevant for the construction of identity (Gollwitzer, 2004). Schwartz's value orientation concept defines human values as criteria by which individuals evaluate the self and the environment (Schwartz, 1992; 2003). Values can be characterized as relatively stable individual conceptions of the importance or desirability of certain motives and goals, which act as moral principles, and which are not only rational but also tied to emotions (Schwartz, 1994). Ten nearly universal, motivationally distinct, values forming a motivational continuum have been distinguished (Schwartz & Boehnke, 2004; Schwartz, 1994). Research has shown that justice and forgiveness are both associated with the same value domain and with the same underlying motivational goals (Schwartz, 1992).

The moral value in question has been labeled *Universalism*. It is a pro-social value containing the generalized wish for understanding, appreciation, tolerance, and protection of the welfare of all humans, equal opportunities for all, social justice, and unity with nature (Feather, 1998; McKee & Feather, 2008; Schwartz, 2007). The Universalism value has been found to relate to evaluations of offense severity and to revenge feelings. For example, respondents' perceptions of the seriousness of hypothetical offenses described in violence related scenarios were found to be influenced by their subjective endorsement of Universalism value (Feather, 1998). A questionnaire study revealed that individuals who endorsed positive attitudes towards vengeance endorsed self-transcending value types like Universalism less strongly (McKee & Feather, 2008). Accordingly, we hypothesize that people scoring high in Universalism show a lower inclination to avenge transgressions. More specifically, we suggest that it is the "social con-

cern” component of Universalism, concerning equality, peace, and social justice (as opposed to the “nature” component), that is associated with the occurrence of revenge phenomena (Schwartz & Boehnke, 2004), which are, by nature, social and interpersonal.

Motivational factors of the PTSD–revenge relationship

It is known that victimizations are always related to the loss or injury of self-worth (Exline et al., 2003; Fincham, 2000; Freedman & Enright, 1996). Ensuing attempts to restore self-worth, which can be regarded as a stable human need, may find their expression in revenge feelings or behaviors. In this sense, revenge can be regarded as a reaction to transgression that is motivated by the desire to strengthen one’s self-worth (Eaton et al., 2006; McKee & Feather, 2008). Psychoanalytic conceptions of revenge also regard the need to restore self-worth as an essential variable in the development of revenge (Böhm & Kaplan, 2009; Rosen, 2007).

Self-esteem. Self-esteem, as a dimension of the self-concept, is regarded as the individual’s general attitude toward him- or herself and his or her own worth. Revenge phenomena (respectively the abdication of revenge) have sometimes been regarded as an implicit expression of the individual’s level of *self-esteem* (Heider, 1958). Indeed, interindividual differences in revenge phenomena have been shown to be at least partially influenced by the dispositional manifestation of self-esteem (Fincham, 2000; Maes, 1994). Experimental studies have shown that a secure self-esteem buffers against ego threat, whereas a defensive self-esteem is associated with high vengefulness. Furthermore, it has been found that self-esteem is negatively related to revenge motivations, whereas it is positively related to forgiveness (Eaton et al., 2006). In a study with female incest survivors, those who succeeded in forgiving the perpetrator showed an increase in psychological well-being, as indicated by higher self-esteem (Freedman & Enright, 1996). In general, the individual tendency to forgive has been demonstrated to be, at least tendentially, positively correlated with self-esteem (Brown, 2003; Eaton et al., 2006; Hebl & Enright, 1993; Neto & Mullet, 2004). In terms of the process model of revenge, we expect

self-esteem to moderate the relationship between PTSD and revenge and we hypothesize that people with high self-esteem show lower levels of revenge phenomena even though emotional and cognitive factors promoting revenge are given.

Self-efficacy. Self-efficacy, another essential self-referential trait, is defined as people's belief about their capabilities to cope and produce designated levels of performance even in difficult and challenging life situations (Smith, 1989). Perceived self-efficacy seems to be another important variable in relation to PTSD and revenge. A variety of studies have found negative associations between individual levels of self-efficacy and severity of PTSD symptoms (Benight & Harper, 2002; Saigh et al., 1995). It is conceivable that self-efficacy is impaired by a traumatic experience, and, vice versa, that a low dispositional level of self-efficacy increases vulnerability to mental disorders following a serious transgression or trauma. A longitudinal study with firefighters demonstrated that a low pre-traumatic level of self-efficacy accounted for more than 40% of the variance in later PTSD symptoms. Low self-efficacy is thus a risk factor for the development of PTSD that may be related to the perception of life's unpredictability and uncontrollability (Heinrichs et al., 2005).

In terms of revenge, it seems conceivable that enduring feelings or thoughts of revenge that never lead to a satisfying result may lead to low self-efficacy, and, vice versa, that revenge phenomena may result from the attempt to restore impaired self-efficacy and to cope with uncomfortable feelings of helplessness, weakness, and uncontrollability. To date, however, empirical findings on the specific relationship between revenge and self-efficacy are scarce. It has merely been reported that high self-efficacy explains a significant percentage of the variance in anger when the desire for revenge is controlled (DiGiuseppe & Froh, 2002). In a broader context, it has been suggested that the specific self-efficacy to take health-related actions may be a potential pathway linking forgiveness and health (Thoresen et al., 2000). In conclusion, we hypothesize self-efficacy to have a similar moderating effect on the PTSD–revenge relation as self-esteem, assuming that people with a high level of self-efficacy do not need revenge as a

coping strategy, because they feel able to deal with the traumatic experiences in a more positive way.

The relationship between revenge and forgiveness

Another important and frequently discussed topic is the association between revenge and forgiveness (Brown, 2003). Researchers agree that there is a strong relationship between revenge and forgiveness and that both constructs impact psychological health. Beyond this apparent consensus, roughly classified two main theoretical approaches can be distinguished. The first is that revenge and forgiveness represent opposite ends of a continuum (Mullet et al., 1998). From this point of view, forgiveness is regarded as the opposite of revenge—as relinquishing the desire for vengeance and the negative emotions generated by the offense. In support of this approach, empirical findings show that the disposition to avenge is negatively correlated to the later development of forgiveness (McCullough et al., 2001). Furthermore, a diagnostic scale with a Revenge Versus Forgiveness factor has been conceptualized and replicated reflecting a general tendency in people either to forgive or to seek revenge (Mullet et al., 1998; Stuckless & Goranson, 1992). However, this conceptualization of revenge and forgiveness as polar opposites has been criticized for negating important aspects of the revenge concept (Ho et al., 2002).

The second approach states that the two constructs are not just simple opposites and neither can be viewed as the pure absence of the other (Brown, 2003; 2004). Studies have shown that the forgiving and the vengeful dispositions are only moderately negatively correlated (Ys-seldyk et al., 2007) and that revenge and forgiveness cognitions represent distinct approaches to coping with injustice (Bradfield & Aquino, 1999). From this perspective, the dispositional tendency to forgive has been conceptualized as theoretically and empirically distinct from dispositional vengeance (Brown, 2004). The personal tendency to forgive has been shown to be positively associated with forgiving a recent hurt but not negatively associated with revenge moti-

uations toward the transgressor (Wade & Worthington, 2003). Of course, forgiveness involves the release of bitterness and vengeance (Exline et al., 2003) and can prevent the genesis of revenge by replacing negative emotions, cognitions, and behavior by more positive ones (Bullock et al., 2006; Fincham, 2000; Harris & Thoresen, 2005; McCullough et al., 1998). However, not forgiving does not necessarily result in the desire for revenge, and not seeking revenge does not necessarily imply forgiveness (Brown, 2003).

In this sense, *unforgiveness* rather than revenge should be regarded as the opposite of forgiveness. Unforgiveness is commonly characterized as an enduring status of non-forgiving a harmful experience that is related to negative emotions, such as resentment, grudge, bitterness, hostility, hatred, anger, fear, and depression (Berry et al., 2005; Neto & Mullet, 2004; Muñoz Sastre et al., 2003; Worthington & Wade 1999). The state of unforgiveness is considered to be inconvenient and stressful (Berry et al., 2005; Worthington & Scherer, 2004), encompassing the motivation to reduce the negative emotions and to retaliate against the transgressor (Berry et al., 2005; Worthington & Wade 1999). It can be regarded as a necessary but insufficient precondition for the development of revenge. Following this second theoretical approach, we argue that revenge and forgiveness, although related constructs, have distinct characteristics and are not opposing ends of a continuum. With regard to the revenge model, we hypothesize that revenge and forgiveness follow similar but nevertheless different psychological pathways.

The course of feelings of revenge

Little is known about the developmental stages of revenge and its course over time. Few studies have described long-term characteristics of revenge. There is thought to be a critical time period after an attack during which the individual forms a cognitive appraisal of the offense and decides how to respond to it (Kremer & Stephens, 1983). This period can also be considered critical for the development of feelings or thoughts of revenge. Moreover, the level and impact of revenge phenomena is thought to change with time. In general, the literature re-

ports a decline in feelings of revenge over time. Among victims of violence and severe atrocities, feelings of revenge tended to be substantially higher immediately after the trauma than years later (Orth, 2004; Orth et al., 2003). Likewise, in a sample of psychology students who had experienced an interpersonal transgression, the mean intraindividual revenge motivations toward the transgressor showed a linear decrease over time (McCullough et al., 2003). Similar patterns of results have been reported from experimental studies (Wohl & McGrath, 2007).

Despite this decrease in intensity over time, it is noteworthy that feelings and thoughts of revenge do not disappear completely in the long term. Victims of violent crimes, for example, have been reported to experience strong feelings of revenge even several years after their victimization (Orth, 2004). A follow-up survey among Kosovo Albanians exposed to war revealed that, despite an overall decrease, feelings of revenge and the desire to act on them were not significantly lower one year later than immediately after the trauma (Lopes Cardozo et al., 2003). These results indicate high intraindividual stability of feelings of revenge. Some authors have suggested that the observed decline in feelings of revenge may be transitory, depending on the extent to which the current context is stressful and reminds victims of the trauma (Wohl & McGrath, 2007), and that individual levels of revenge phenomena may fluctuate over time (McCullough et al., 2003).

Psychological research has already identified some factors influencing the long-term course of revenge. The initial states of forbearance and vengefulness and the attribution of responsibility seem to be key variables (McCullough et al., 2001). Additionally, subjectively perceived temporal distance from the transgression has been reported to facilitate forgiveness and reductions in revenge phenomena (Wohl & McGrath, 2007), whereas the objective length of time since victimization does not seem to have a significant influence on the intensity of revenge feelings (Orth, 2004). Aside from these findings, little is known about the long-term course of revenge phenomena or the factors that modulate it. Anyhow, the impact of persisting

feelings and thoughts of revenge on health has been investigated in various studies as will be shown in the following section.

Revenge and health

Revenge should not be understood as a psychological disorder per se, nevertheless, impairments of physical and mental health that result from traumatic experiences might be partially mediated by vengeful feelings and thoughts. In this context, we now address in more detail why and when revenge seems to be a negative and destructive emotion. Psychological studies have shown that psychological revenge phenomena lead to poorer mental health (Lopes Cardozo et al., 2003; McCullough et al., 2001). This negative impact on health may become manifest in different ways: negative affectivity such as depressive affect (Ysseldyk et al., 2007), an increased risk of developing psychiatric morbidity (Hamama-Raz et al., 2008; Kaminer et al., 2001), reduced satisfaction with life (Bono et al., 2008; McCullough et al., 2001), diminished sleep quality (Lawler et al., 2005), and higher levels of emotional distress (Hamama-Raz et al., 2008). Revenge has also been found to impair physical health (Bono et al., 2008). Vengeful thoughts, for instance, have been demonstrated to increase cardiovascular activity and subsequently the risk for cardiovascular diseases (Maxwell et al., 2005). Physiological parameters, such as hormonal patterns or sympathetic nervous system activity associated with unforgiveness and grudge-holding, have been described as comparable to the physiological patterns following stress (Harris & Thoresen, 2005; Lawler et al., 2005; Witvliet et al., 2001; Worthington & Scherer, 2004; Worthington et al., 2007).

Importantly, psychological research has shown that revenge phenomena maintain the symptoms of PTSD (Lopes Cardozo et al., 2003; Ysseldyk et al., 2007), as described in the section *Revenge as Coping strategy*. It has been demonstrated that initial feelings of revenge do not correlate with posttraumatic stress, whereas current feelings of revenge a few years later do (Orth et al., 2003). Various possible reasons for this stabilizing effect are worth consideration:

Traumatized people who struggle with intense fantasies and feelings of revenge may at the same time suffer from shame and guilt about their negative attitudes, retaliatory fantasies, and loss of control (Horowitz, 2007; Rose, 1991), which may in turn negatively influence mental health. Furthermore, the ruminative character of revenge may maintain PTSD; continued thoughts or fantasies of revenge may trigger intrusive traumatic memories, and rumination is known to be linked to psychological stress (Ysseldyk et al., 2007). Additionally, the occurrence of unproductive thoughts, such as long-term thoughts of revenge, and the co-occurring negative emotions, such as anger or hate, may contribute to the maintenance of PTSD (Michael et al., 2007). In terms of the associative network theory described above, the maintenance of anger or revenge for fear reduction may also contribute to the continued activation of the related fear structures and therefore interferes with the habituation to traumatic memories and the amelioration of PTSD symptomatology (Milgram et al., 2006; Riggs et al., 1992).

Continual occupation with revenge fantasies and thoughts of restoring equality and justice provides no relief from trauma and keeps the victim stuck in the past, preventing him or her from moving on (Ehlers, 1999). Furthermore, revenge phenomena may contribute to stabilizing PTSD by maintaining heightened physiological arousal, which is again related to PTSD symptomatology. The occurrence of revenge phenomena also seems to be relevant in the context of Posttraumatic Embitterment Disorder. As we stated in the introduction, there is some evidence for revenge as a co-occurring affective state in PTED. It is conceivable that feelings or thoughts of revenge maintain *PTED* symptomatology in a similar way as they do PTSD symptomatology. Of course, given that no research has yet investigated the specific role of revenge in PTED, this is a purely speculative idea.

Coming full circle: Therapeutic implications and research perspectives

In sum, this chapter provided an outline of psychological revenge phenomena, which can be regarded as linked to trauma-related disorders such as PTSD, and, in a broader sense,

embitterment and PTED. Drawing on the recent psychological literature, we presented a theoretical model of intraindividual processes of revenge that focuses on the relationship between PTSD and revenge phenomena after trauma and proposes emotional, cognitive, and motivational factors to mediate this relationship. We thus hope to draw research attention to a little investigated factor that may contribute to the occurrence and maintenance of disorders following trauma. It is our hope that the presented model will help researchers and practitioners to understand the processes underlying revenge and the influence of revenge phenomena on PTSD, and that it will offer some starting points for interventions as well as for further research.

Therapeutic implications

Victims typically need social support after traumatization (Maercker & Müller, 2004). As well as appreciation and personal, official, and social acknowledgement of the injustice experienced and the suffering caused, professional psychotherapeutic support is crucial for recovering from trauma (Lamb, 2005). The negative mental and physical health outcomes of revenge phenomena underline the importance of therapeutic interventions. If frequent and intense thoughts and desires of revenge are dysfunctional for the healing process and hinder recovery from trauma, the development of goal-oriented strategies for coping with revenge may enhance therapeutic effectiveness (Lamb, 2005; Orth et al., 2003). It has been suggested that traumatic aftereffects cease only when victims are able to abandon the desire for and the rumination about revenge (Ehlers, 1999; Orth et al., 2003).

Many researchers and psychotherapists identify forgiveness as goal of the therapeutic process (Freedman & Enright, 1996; Hebl & Enright, 1993; Reed & Enright, 2006). It would be beyond the scope of this chapter to consider the different types of forgiveness interventions or the importance of forgiveness in therapy. However, it is important to bear in mind that the observed positive impact of forgiveness on health seems to be mediated by reduced unforgiveness (Harris & Thoresen, 2005; Worthington et al., 2007), reduced negative affect, and reduced

stress (Lawler et al., 2005), rather than by the development of positive emotions toward the offender. In other words, forgiving a transgression or humiliation does not seem to be necessary for recovering from trauma. In fact, helping victims to acknowledge their feelings or fantasies of revenge and to accept the complexity and ambivalence of emotions, to release and to overcome revenge preoccupations, and to regain identity coherence should be regarded as the main therapeutic goals in the context of trauma (Horowitz, 2007; Lamb, 2005). The therapist, together with the client, should try to develop more constructive ways to deal with suffering—for example, by finding appropriate ways to express and to reduce the feelings of anger, hatred, and bitterness that underlie revenge, and to replace the desire for revenge by more positive and future-oriented coping strategies. Dysfunctional cognitive evaluations and beliefs should be identified and reorganized; damaged self-esteem and perception of self-efficacy need to be restored.

Further research perspectives

Given that most of the studies discussed in this chapter were cross-sectional, and given the lack of research on detailed aspects and processes of revenge, there is a clear need for broader research on this topic. In particular, the causality of the relationship between revenge phenomena and disorders following trauma, mainly PTSD, remains unclear. Longitudinal prospective studies are needed to augment the cross-sectional and retrospective data and to provide more valid insights into the causal directions and the course and dynamics of revenge. Furthermore, more research is needed into the specific relationship between revenge and embitterment as well as the role of revenge in Posttraumatic Embitterment Disorder. In addition, predictors of the long-term course of revenge phenomena after victimization, determinants of their persistence, and insights into how individual differences influence revenge are of both theoretical and practical significance. In general, a better understanding of revenge and, in particular, of protective factors is essential for preventive interventions, such as risk assessment in trauma-exposed populations, and for therapeutic approaches.

A study we conducted in 2008 represents a first step to investigating and explaining the influence of revenge occurrence on PTSD and to identifying variables associated with revenge. The study was a follow-up study of the 1995 Dresden investigation of former East German political prisoners who had experienced physical and psychological torture during their confinement (Maercker & Schützwohl, 1997). We examined the relationship between different aspects of revenge (revenge feelings, thoughts, and behavioral tendencies) and PTSD symptomatology, as well as the role of several variables included in the revenge model presented in this chapter, namely anger, hatred, embitterment, attitudes toward revenge, basic human values, and self-efficacy. Preliminary results indicate that PTSD is indeed related to the existence of revenge phenomena, and that revenge is associated with most of the factors included in the model (Gäbler & Maercker, 2011). Should these findings prove generalizeable to other trauma groups, psychological revenge phenomena may be established as a further variable predicting PTSD after traumatization. Of course, it remains questionable whether a single model can adequately explain such a complex phenomenon as revenge. However, it seems that the model can at least offer an approximation of relevant factors, and it promises to enhance the scientific understanding of revenge in the context of disorders following trauma. Additionally, we believe that studying revenge may provide new insights into the phenomena of embitterment and Embitterment Disorder.

ARTICLE II:
REVENGE PHENOMENA AND POSTTRAUMATIC STRESS DISORDER IN
FORMER EAST GERMAN POLITICAL PRISONERS

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Abstract

To date, psychological revenge phenomena have not been investigated systematically as factors potentially contributing to posttraumatic stress disorder (PTSD). This follow-up study (1995: $N = 146$; 2008: $N = 93$) assessed the predictive power of revenge phenomena for current PTSD symptoms in a sample of former East German political prisoners some four decades after traumatization. As the results of multiple hierarchical regression analyses have revealed, revenge feelings and cognitions significantly contributed to the prediction of both self-reported and clinician-rated PTSD symptoms above and beyond standard predictor variables. In contrast, revenge intentions did not contribute to the prediction of current PTSD. The findings suggest that revenge feelings and cognitions may be a maintaining factor for longtime PTSD. Identification and therapeutic modification of dysfunctional revenge phenomena may therefore enhance the effectiveness of psychotherapy for persistent PTSD.

Introduction

It is known from reports of clinicians and psychotherapists treating survivors of trauma (Horowitz, 2007) and from the trauma research literature that feelings and cognitions of revenge may develop in the aftermath of severe traumatization. Apart from the fact that feelings and fantasies of revenge may motivate negative social behavior (Stuckless & Goranson, 1992), being purely inner psychological processes, they cannot be regarded as pathological per se. In the short run, revenge phenomena may even have psychological benefits for the victim, such as relief from negative emotions, reassurance, and restoration of power, control, and self-esteem (Bradfield & Aquino, 1999; Orth et al., 2003). However, in the long run, they fail to fulfill the motives driving them, and they become dysfunctional. It has been stated that revenge feelings and cognitions may prevent the victim from reaching closure on the trauma (Ehlers, 1999) and thus contribute to the maintenance of posttraumatic stress disorder (PTSD). Moreover, they seem to be accompanied by other negative and stressful emotions such as shame or remorse (Horowitz, 2007) and by physiological arousal that is also related to PTSD symptoms. Persistent thoughts or feelings of revenge have been shown to be related to PTSD, such as in the survivors of the Kosovo War (Lopes Cardozo et al., 2003; Lopes Cardozo et al., 2000), in former Ugandan and Congolese child soldiers (Bayer et al., 2007), or in Cambodians who had been exposed to the Khmer Rouge Regime (Sonis et al., 2009). However, these thoughts or feelings were also found in the aftermath of civilian trauma, such as Greek earthquake survivors (Rousos et al., 2005), in Nicaraguan hurricane victims (Goenjian et al., 2001), and in crime victims (Orth, 2003; Orth et al., 2006).

It has been suggested that revenge feelings and cognitions do not contribute to the development of PTSD but may affect the course and maintenance of its symptoms, as data from German crime victims (Orth et al., 2003; Orth et al., 2006) indicate. However, most of the studies reporting a relationship between revenge phenomena and PTSD were cross-sectional and did not distinguish developmental factors from factors maintaining PTSD. Moreover, most pre-

vious studies assessed revenge phenomena only in concomitance with other psychological phenomena and did not focus on revenge in particular. Finally, revenge phenomena have not yet been investigated in political prisoners, although this specific group can be considered especially vulnerable in the development of both PTSD and revenge phenomena.

Various studies have reported high rates of PTSD in former political prisoners (Basoglu et al., 1994; Bauer et al., 1993; Bichescu et al., 2005; Kagee, 2005; Maercker & Schützwohl, 1997) even decades after the event. Although the relationship between anger and PTSD in this trauma group has been investigated (Schützwohl & Maercker, 2000), revenge has not yet been examined in this context. The present study therefore addresses the specific impact of revenge phenomena on current PTSD in the long run after traumatization above and beyond standard predictor variables in a sample of former East German political prisoners. Political imprisonment in the former East Germany represented a severe form of traumatization: prisoners were subjected to harsh interrogation and confinement methods such as physical violence, deprivation of medical care or nourishment, and psychological maltreatment such as solitary or dark confinement, extensive nightly interrogations, sleep deprivation, threats to life, and even mock executions (Bauer et al., 1993; Maercker & Schützwohl, 1997) that fulfill the criteria of torture (Amnesty International, 1989). Many former political prisoners were unable to talk about their traumatic experiences because they were enjoined from it in the former East Germany or, if they were “bought out” by West Germany, because they did not experience the acknowledgment and interest of their environment. In addition, most of them received no or only very delayed psychotherapeutic support. Moreover, former East German political prisoners are characterized by several factors that have been identified to promote revenge: exposure to grave and continued injustice (Stuckless & Goranson, 1992), severe and persisting injuries, impunity of those responsible, lack of admission of guilt or apologies from those responsible, lack of societal and governmental acknowledgement, and lack of adequate financial compensation (Orth,

2004). Psychotherapists treating these patients in their clinical practice describe them as struggling with feelings or fantasies of revenge that may hamper recovery from trauma.

We argue that investigating the contribution of psychological revenge phenomena to PTSD will improve the understanding of posttraumatic processes. If revenge phenomena are found to contribute to current PTSD decades after trauma, important practical implications result. In contrast to unchangeable factors such as sex and trauma severity, intrapersonal revenge processes can be therapeutically targeted and treated.

Conceptualization of revenge

Most previous studies investigating revenge phenomena in the context of trauma did not offer a precise definition or theoretical conceptualization of the revenge construct. Revenge is generally regarded as a destructive response to injustice that is of high emotional intensity and that is usually disproportionate to the severity of the offense (Bradfield & Aquino, 1999). In this study, we examine revenge as an intrapersonal process that can be expressed in revenge thoughts and fantasies, feelings, and intentions. Drawing on the cognitive appraisal theories of emotions, we conceptualize revenge as a complex emotion encompassing cognitive, affective, and motivational components (Gäbler & Maercker, 2011a). Moreover, we regard revenge phenomena as a dysfunctional attempt to cope with stress and perceived threat (Bradfield & Aquino, 1999; Orth et al., 2003; Orth et al., 2006) that reflects a tendency to avoid negative emotional reactions such as anxiety, helplessness, and loss of control resulting from trauma (Orth et al., 2006) and is relatively stable over time and situations (Stuckless & Goranson, 1992; Ysseldyk et al., 2007).

Study goals and hypotheses

This study investigated the specific impact of current revenge phenomena on PTSD more than 40 years, on average, after release from political imprisonment. A key aim of our

study was to address some of the limitations of previous research, namely cross-sectional PTSD data, bias resulting from self reports of symptoms, and restricted information on revenge phenomena. Specifically, we obtained longitudinal data on PTSD symptoms during a 13-year period from both self-reported and clinician ratings of PTSD symptoms. However, revenge in the context of trauma and PTSD is a new research field in clinical psychology. Therefore, no longitudinal data on revenge exists for our sample. Nevertheless, for our pre-analyses, we were able to include both the associations between current revenge and current PTSD symptoms, as well as between current revenge and former PTSD symptoms. This serves at least as a rough approximation of the underlying causality between these two mental phenomena. Furthermore, we sought to collect broader information on and tried to include different aspects of revenge phenomena, namely revenge intentions. In line with previous studies, we hypothesized that revenge feelings and cognitions contribute to the prediction of current PTSD symptoms. In addition, we expected revenge intentions, as a more behavior-related aspect of revenge, to further contribute to the prediction of current PTSD.

Method

The present sample of former East German political prisoners was first interviewed in 1995 (Maercker & Schützwohl, 1997) and was invited to participate in a follow-up in 2008—on average, four decades after their release from prison. Participants in the 1995 study had been recruited via newspaper advertisements and societies of former political prisoners. In the 2008 study, data collection took place either in the research department of the psychiatric clinic at Dresden University (eastern Germany) or, in the case of immobility, in participants' hometowns. The data analyzed in the present paper are part of a larger data set.

Measures

PTSD symptoms. Both self-report and clinician ratings of PTSD symptoms were obtained in 1995 and in 2008. Participants were explicitly asked to report PTSD symptoms relating to their political imprisonment. The *German version of the Impact of Event Scale-Revised* (IES-R, see *Appendix A*; German translation: Maercker & Schützwohl, 1998) was used to assess the frequency of PTSD symptoms in the past 7 seven days. The scale provides a good measure of posttraumatic stress symptoms (Brewin, 2005). The psychometric properties of the German version of the IES-R have been shown to be satisfactory (Maercker & Schützwohl, 1998). The 22 item scale comprises three subscales, namely Intrusions (Cronbach's $\alpha = .91$ in this study), Avoidance (Cronbach's $\alpha = .81$ in this study), and Hyperarousal (Cronbach's $\alpha = .91$ in this study). Ratings were given on a 4-point scale ranging from 0 (*not at all*) to 5 (*often*). Sum scores were computed for the three subscales (Intrusions and Hyperarousal, 0 to 35; Avoidance, 0 to 40). The literature advises against summation to a total score (Maercker & Schützwohl, 1998).

The *Diagnostic Interview for Psychological Symptoms* (DIPS, Schneider & Margraf, 2006) was used to diagnose PTSD according to criteria from the Diagnostic and Statistical Manual for Mental Disorders, 4th edition (DSM-IV, American Psychiatric Association, 2000). The psychometric quality of this structured clinical interview has been shown to be good (Schneider & Margraf, 2006). The DIPS provides both current and lifetime diagnoses of PTSD. In addition, the number of clinically relevant symptoms of each category was summed (intrusions and hyperarousal, 0 to 5; avoidance/numbing, 0 to 7). Note that, because in 1995, PTSD was assessed using the DIPS from DSM-III-R (Margraf et al., 1991), these data were re-analyzed in accordance with the DSM-IV criteria. All clinical interviews were conducted by the author of this article, who is clinically experienced and has been specifically trained in the application of the DIPS. Possible rater biases can be minimized by using the strategy of only one diagnostician.

Revenge phenomena. In the follow-up, participants rated the frequency of their thoughts, fantasies, and feelings of revenge during the preceding 4 weeks on the three-item Revenge Scale (Orth, 2003, see *Appendix B*). Feelings and cognitions of revenge were assumed to be relatively stable over time (see *Introduction*). The psychometric properties of the scale have been described as good (Orth, 2003; 2004; Cronbach's $\alpha = .94$ in this study). In the following, we call this scale *Revenge Feelings and Cognitions Scale*. In extension to this scale, we developed a new three-item scale to assess intentional and behavior-related components of revenge. The conception of this scale was based on our conceptualization of revenge as a complex emotion including not only emotional and cognitive components but also motivational and intention- and behavior-related aspects. The items of this scale represent a gradient intensity of revenge intentions: Participants rated the frequency of their revenge plans, hypothetical behavior, and factual behavioral tendencies in the preceding 4 weeks. We call this scale the *Revenge Intentions Scale* (see *Appendix C*; Cronbach's $\alpha = .75$ in this study). On both scales, responses were given on a 6-point scale ranging from 0 (*not at all*) to 5 (*very often*). The wordings of all revenge items and the measures of the internal consistency for both revenge scales are given in Table 2.

Table 2 Item wording and item statistics for the two revenge scales ($N = 89$)

		<i>M</i>	<i>SD</i>	Cronbach's α when item 6 deleted*
Revenge scale (Orth, 2003)	1. "How often did thoughts come to mind, without your wanting them to, about doing something to the perpetrator?" (intrusive cognitions)	1.38	1.53	.91
	2. "How often did you fantasize about getting back at the perpetrator for what he or she did to you?" (voluntary cognitions)	1.56	1.60	.88
	3. "Did you experience feelings of revenge?" (emotional intensity)	1.84	1.64	.94
New revenge intention items	4. "Have you ever seriously planned to take revenge in any form on the responsible person?" (planning)	0.80	1.32	.44
	5. "If you had the possibility, would you harm the responsible person in order to take revenge?" (hypothetical behavior)	0.93	1.44	.53
	6. "Have you ever taken steps to take revenge on the responsible person?" (factual behavior)	0.47	1.03	.87

Note. *Separately for the two subscales Revenge Feelings and Cognitions and Revenge Intentions

Trauma severity. Previous research suggests that the subjective appraisal of trauma severity may have a greater impact than objective trauma severity on later PTSD (Maercker & Schützwohl, 1997). We therefore asked participants for their subjective ratings on the severity of their worst experience during imprisonment and of the whole imprisonment period using a 7-point scale ranging from 1 (*not at all severe*) to 7 (*extremely severe*). For objective trauma severity, namely specific types of trauma experienced during imprisonment, see the results of the first study (Maercker & Schützwohl, 1997). To control for further trauma beyond political imprisonment, we asked the participants to report other traumatic life experiences and to rate their severity on the same 7-point scale.

Demographic data. We gathered demographic information on participants' sex, age, marital status, educational level, degree of religious belief, income, and subjective satisfaction with their financial status.

Social support. Social support was assessed using the 14-item short version of the *Social Support Questionnaire* (F-SozU, Fydrich et al., 2007), which taps the subjectively perceived or anticipated social support, including the aspects of emotional and instrumental support and social integration. The psychometric properties of the instrument have been shown to be good (Fydrich et al., 2007; Cronbach's $\alpha = .94$ in this study). The items were rated on a 5-point scale ranging from 1 (*not at all true*) to 5 (*absolutely true*). The sum score across all items was computed (0 to 70).

Statistical analyses

Data were analyzed using SPSS18 (SPSS Incorporated, 2008). In addition to correlative analyses (because of the non-normal distribution of most scales we report Spearman rho), stepwise multiple hierarchical regression analyses tested the incremental validity of the selected predictor variables for each outcome variable (IES-R subscales and the number of clinician-rated symptoms in each symptom category). Given the relatively small sample size, the number

of predictors entered in the regression model had to be limited to seven and eight, guaranteeing at least the proposed acceptable minimum of cases per predictor (Green, 1991). We chose a conservative procedure, first calculating the predictive power of standard predictors of PTSD and then computing the unique contribution of revenge phenomena above and beyond the most powerful of these predictors. Finally, a binary logistic regression analysis tested the predictive power of the proposed model (0, no PTSD diagnosis, 1, PTSD diagnosis). The data met the preconditions for these regression analyses.

Sample characteristics

Of the 146 participants in the 1995 assessment, 25 had died by 2008, 17 refused participation at follow-up mainly because of fear of retraumatization or health impairments such as previous heart attacks or cognitive impairments. Eleven persons could not be located. Therefore, there were 93 participants in the follow-up study (participation rate: 76.9% of the 121 surviving participants). The sex ratio was almost identical at both points of measurement and approximates the sex ratio of political prisoners in the former East Germany.

Table 3 Selected sample characteristics at follow-up in 2008 (versus 1995)

	Follow-up study 2008 <i>N</i> = 93	
	n	%
Gender		
Female	15	16.1 (14.4)
Male	78	83.9 (85.6)
Marital status		
Single	9	10.0 (13.6)
Married/in partnership	62	68.9 (58.6)
Widowed	6	6.7 (3.6)
Divorced	13	14.4 (24.2)
Professional status		
Full-time employed	19	21.1 (32.6)
Part time employed	3	3.3 (4.3)
Unemployed	3	3.3 (4.3)
Retirement pension	47	52.2
Invalidity pension	18	20.0
		(39.9)

In 2008, participants' age ranged from 40 to 85 years ($M = 64.4$ years, $SD = 10.7$ years). The mean age at imprisonment was 25 years ($SD = 7.8$ years, range 15–49.5 years); the mean time of imprisonment was 29.3 months ($SD = 28.5$ months, range 2–153 months). An average of 36.8 years ($SD = 11$ years, range 18.6–55 years) had elapsed since release from prison (1995: $M = 23.8$ years, $SD = 11$ years, range 6–42 years). More than 50% of participants in our sample reported that they had never been treated because of mental problems resulting from political imprisonment. Only 6.5% received a specific trauma therapy. Further sample characteristics are presented in Table 3.

Results

All participants reported the political imprisonment as being the most grave and traumatizing experience of their lives (compared with divorce, death of a loved one, or severe illness) and rated its severity highest ($M = 6.31$). In 2008, 32.6% of participants fulfilled the criteria for a PTSD diagnosis (number of intrusion symptoms: $M = 1.80$, $SD = 1.69$; number of avoidance symptoms: $M = 1.72$, $SD = 1.74$; number of hyperarousal symptoms: $M = 2.58$, $SD = 1.55$) compared with 29.0% of the adequate sample in 1995. Lifetime prevalence of PTSD was about 70% (Maercker et al., 2011). Self-reported PTSD symptoms (Intrusions: $M = 19.07$, $SD = 10.42$; Avoidance: $M = 14.37$, $SD = 9.55$; Hyperarousal: $M = 15.69$, $SD = 11.21$) were moderately to highly correlated with clinician-rated symptoms (Intrusions: $r_s = .57$; Avoidance: $r_s = .35$; Hyperarousal: $r_s = .73$, all $ps < .01$).

Preliminary analyses: Selection of predictor variables

Revenge phenomena. The *Revenge Feelings and Cognitions Scale* (Orth, 2003) showed a much higher internal consistency than did the newly developed *Revenge Intentions Scale*. The item statistics showed that the last item, which is the only one to assess factual revenge behavior in contrast to purely mental phenomena, reduced the homogeneity of the *Revenge Intentions*

Scale. Taking into account both item contents and statistical arguments, we excluded this item of the *Revenge Intentions Scale* from the further analyses (Cronbach's α of the two-item scale = .87). Correlations between the two revenge scales were substantial ($r_s = .68, p < .01$) but not very high, indicating that the two scales seem to measure similar but not identical aspects of revenge.

No significant correlations were found between current revenge and PTSD symptoms in 1995, except between *feelings and cognitions of revenge* and the DIPS number of hyperarousal symptoms ($r_s = .23, p < .05$) and IES Intrusions ($r_s = .25, p < .05$). In contrast, the analyses revealed a considerable relationship between current PTSD symptoms and the *Revenge Feelings and Cognitions Scale* (see Table 4). However, most correlations between the two-item *Revenge Intentions Scale* and the outcome measures were non-significant (see Table 4). Despite the low associations between revenge intentions and current PTSD, we decided to test the association of both *revenge feelings and cognitions* and *revenge intentions* (without the last item) with current PTSD symptoms, thus covering different aspects of revenge.

Trauma characteristics. Objective trauma severity (duration, number of different traumas during imprisonment) was not associated with the measures of current PTSD (except for the correlations between the number of traumatic events during detention and DIPS number of intrusions: $r_s = .27, p < .05$). Both subjective measures of severity were significantly associated with most of the PTSD variables, with the subjective severity of the worst experience during imprisonment showing higher correlations (r_s s between .23 and .32, $ps < .05$). Therefore, this variable was entered in the regression model. No significant correlations between the subjective severity of trauma and revenge were found.

Demographic variables. The only demographic variable that showed substantial correlations with some of the outcome variables (DIPS numbers of intrusions and hyperarousal symptoms) was subjective satisfaction with the financial situation (see Table 4). Together with sex and age as standard predictors, this variable was therefore entered into the regression model.

Table 4 Descriptive statistics and correlations between outcome variables (PTSD symptoms in 2008) and predictor variables included in the regression model

		PTSD symptoms 2008							
		<i>M</i>	<i>SD</i>	CR Intrusions	CR Avoid- ance	CR Arousal	SR Intrusions	SR Avoidance	SR Arousal
PTSD symptoms 1995	CR Intrusions	2.01	1.34	.40**	.50**	.38**	.49**	.22*	.42**
	CR Avoidance	1.60	1.71	.32**	.53**	.45**	.43**	.31**	.43**
	CR Arousal	2.46	2.00	.53**	.60**	.69**	.58**	.38**	.61**
	SR Intrusions	17.25	9.98	.40**	.50**	.38**	.62**	.27**	.49**
	SR Avoidance	12.05	8.69	.28**	.40**	.27*	.44**	.45**	.40**
	SR Arousal	15.15	11.00	.40**	.53**	.55**	.56**	.40**	.60**
Standard Predictors	Subjective severity	7.35	9.88	.29**	.19	.23*	.32**	.10	.32**
	Gender	-	-	.18	.13	.32**	.27**	.08	.25*
	Age	64.37	10.66	-.15	-.03	-.15	.00	.20	-.05
	Financial situation	3.14	1.72	-.18	-.14	-.13	-.30**	-.20	-.33**
	Social support	4.00	0.94	-.20	-.39**	-.21	-.21*	-.11	-.25*
Revenge	Feelings/cognitions	1.58	1.51	.38**	.31**	.24*	.29**	.18	.33**
	Intentions	0.74	1.04	.19	.27*	.12	.13	.11	.23*

Note. Spearman correlations ** $p < .01$, * $p < .05$ (two-tailed).

CR = clinician-rated symptoms (DIPS); SR = self-reported symptoms (IES-R); revenge intentions = scale without the last item.

Main results: Predicting PTSD symptomatology in 2008

Multiple hierarchical regression analyses were performed. The predictors were entered stepwise: former PTSD symptoms (step 1), subjective severity of the worst experience during imprisonment (step 2), socio-demographic variables such as sex, age, and subjective satisfaction with financial status (step 3), and social support (step 4). Revenge phenomena were entered in the final step (step 5). The incremental validities of the simultaneously entered *Revenge Feelings and Cognitions* and *Revenge Intentions* scales are reported and compared with the incremental validity of *Revenge Feelings and Cognitions Scale* only. Means, standard deviations, and intercorrelations of the variables are shown in Table 4. The amount of variance explained by the predictors (R^2), the incremental validity of the predictors (ΔR^2), and the standardized beta values (β) as obtained from the last regression step are presented in Tables 5 and 6.

Self-reported PTSD symptomatology (IES-R) in 2008. The full set of predictor variables explained 56.6% of the variance in current self reported *intrusions* (see *Table 5*). Intrusion symptoms reported in 1995 accounted for 41.6% of the outcome variance ($p < .001$). When the standard predictor variables were added, the amount of variance explained increased to 53.5%. Revenge phenomena did not significantly contribute to the prediction of current intrusions (further 3.1%, ns). When only *revenge feelings and cognitions* were entered in the final step, however, the amount of explained variance (further 2.6%) became significant ($p < .05$).

The full model explained 34.9% of the variance in self-reported *avoidance* symptoms. Avoidance symptoms reported in 1995 explained 21.7% ($p < .001$) of the variance. The standard predictors did not significantly contribute to the prediction of current symptoms. Revenge phenomena accounted for 5.1% of the variance (not significant). Entering only *revenge feelings and cognitions* significantly contributed to the prediction of current avoidance symptoms (further 4.9%, $p < .05$).

Finally, the model accounted for 56.5% of the variance in self-reported *hyperarousal*. Hyperarousal symptoms reported in 1995 were the best predictor (39% explained variance, $p < .001$). The inclusion of socio-demographic variables significantly improved the prediction (9.1%, $p < .01$), whereas social support did not. Revenge phenomena also significantly contributed to explaining the variance in current hyperarousal symptoms (5.9%, $p < .01$). The significant contribution of this block resulted solely from *revenge feelings and cognitions* (5.9% explained variance, $p < .01$ when entered without *revenge intentions*).

Clinician-rated PTSD symptomatology in 2008. The full set of variables explained 36.5% of the variance in the clinician-rated number of *intrusion* symptoms (see *Table 6*). The number of intrusion symptoms in 1995 accounted for a significant amount of variance (17%, $p < .001$). The standard predictors had no influence. As hypothesized, revenge phenomena accounted for an additional 10.4% of the variance ($p < .01$). Again, *revenge intentions* had no independent effect, whereas *revenge feelings and cognitions* entered separately explained a sig-

nificant proportion of the variance in the number of intrusion symptoms (9.9% explained variance, $p < .001$).

The full model accounted for 46% of variance in the clinician-rated number of *avoidance* symptoms. In 1995, avoidance was the best predictor (28.2%, $p < .001$). Of the standard predictor variables, only social support (8%, $p < .01$) contributed significantly to the prediction. Revenge phenomena explained an additional 6.5% of the variance in avoidance symptoms ($p < .01$). However, this contribution was again attributable solely to *revenge feelings and cognitions* when entered separately (5.9% explained variance, $p < .01$).

Finally, the model accounted for 50.5% of the variance in the clinician-rated number of *hyperarousal* symptoms. Only the number of hyperarousal symptoms in 1995 significantly contributed to the prediction, accounting for almost all of the explained variance (45.5%, $p < .001$). Revenge phenomena (also when revenge feelings and cognitions were entered separately) only contributed 0.9% (not significant) to the prediction of hyperarousal symptoms.

PTSD diagnosis in 2008. The full model also proved to be able to predict whether a participant fulfilled the criteria for a clinical diagnosis of PTSD in 2008 ($\chi^2 = 25.88$, $p < .001$). The model correctly classified 75% of participants in terms of their diagnostic status. The 1995 PTSD diagnosis significantly contributed to the prediction of the current diagnostic status (odds ratio = 3.81, CI [1.13–12.81], $\chi^2 = 11.06$, $p < .01$). Of the standard predictors, only perceived social support significantly contributed (odds ratio = 0.54, CI [0.29–1.01], $\chi^2 = 5.13$, $p < .05$). Entering revenge phenomena significantly increased the prediction of the current diagnostic status ($\chi^2 = 6.50$, $p < .05$). The separate effect sizes of revenge feelings and cognitions and revenge intentions were not significant. In contrast, entering only revenge feelings and cognitions into the model revealed a significant effect size (odds ratio = 1.56, CI [1.08–2.26], $\chi^2 = 5.89$, $p < .05$).

Table 5 Results of hierarchical regression predicting self-reported PTSD symptoms

	<u>Self-reported symptoms (IES-R) 2008</u>					
	<u>Intrusions</u>		<u>Avoidance</u>		<u>Hyperarousal</u>	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.42***		.22***		.39***	
Constant						
PTSD 1995†		0.50***		.33**		.47***
Step 2	.00		.00		.00	
Subjective severity		0.02		-.05		.01
Step 3	.08**		.05		.09**	
Gender		0.22**		.09		.22**
Age		0.18*		.22*		.09
Financial satisfaction		-0.19*		-.18		-.22**
Step 4	.04*		.03		.02	
Social support		-0.20*		-.16		-.15
Step 5	.03		.05		.06**	
Revenge feel./cog.		0.25*		.23*		.25*
Revenge intentions		-0.10		-.06		.01
Total R^2	.57		.35		.56	

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. †appropriate IES-R subscale in each column; $N = 86$.

Table 6 Results of hierarchical regression predicting clinician-rated PTSD symptoms

	<u>Clinician-rated symptoms (DIPS) 2008</u>					
	<u>Intrusions</u>		<u>Avoidance</u>		<u>Hyperarousal</u>	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.17***		.28***		.46***	
Constant						
PTSD 1995†		.25*		.35***		.60***
Step 2	.02		.02		.00	
Subjective severity		.07		.04		-.02
Step 3	.04		.02		.04	
Gender		.12		.10		.20*
Age		-.09		.10		-.02
Financial satisfaction		-.07		-.09		-.02
Step 4	.03		.08**		.00	
Social support		-.17		-.32***		-.04
Step 5	.10**		.07*		.01	
Revenge feel./cog.		.41**		.33*		.12
Revenge intentions		-.11		-.12		-.04
Total R^2	.36		.46		.51	

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. †appropriate DIPS symptom cluster in each column; $N = 84$.

Discussion

This study investigated the predictive contribution of psychological revenge phenomena for current PTSD symptomatology in a sample of former East German political prisoners. Although neither revenge feelings and cognitions nor revenge intentions were very high in our sample, they did exist—on average 40 years after trauma. The level of revenge feelings and

cognitions in our sample is comparable to means reported for German crime victims on average four years after their victimization, supporting the idea that psychological revenge phenomena are stable over time (Orth, 2004). The rate of current PTSD in our sample was higher than the rates reported for other groups of political prisoners (Basoglu et al., 1994; Bichescu et al., 2005; Kagee, 2005). These differences may stem from the specific characteristics of the trauma in the former East German political prisoners as discussed above (see *Introduction*). Moreover, the PTSD rate in 2008 was higher than it has been in 1995. Results indicate a high stability of PTSD symptoms over time. Additionally, it seems that due to the long time that has passed since release from prison and the 2008 study further negative incidents, such as retirement, diseases, or reduction of the social network, may have lead to an aggravation or extremely delayed onset of PTSD symptoms. Specific courses and analyses of stability, recovery, or different patterns of PTSD will be discussed in a forthcoming article (Maercker et al., 2011).

In our sample, both self-reported and clinician-rated PTSD symptoms in 2008 were best predicted by symptoms in 1995 further supporting the assumption of high long-term stability of PTSD after such a severe type II traumatization. Perceived social support had relatively low predictive power. It has been proposed that the relationship between PTSD and social support may invert a long time after trauma: In the long run, it is perhaps not the lack of social support that leads to more PTSD symptoms, but the persistence of PTSD symptoms that leads to less received and perceived social support (Schützwohl & Maercker, 2000). Social support thus becomes a weak predictor of PTSD in the long run.

Regarding revenge phenomena: For the most part, the data supported our hypotheses. *Revenge feelings and cognitions* made a significant contribution to the prediction of long-term PTSD symptomatology. This finding is in line with previous research findings (Orth et al., 2003; Orth et al., 2006) and with reports from clinical practice (Horowitz, 2007) showing that the cultivation of revenge feelings and cognitions is self-defeating and hampers recovery from PTSD. Several theoretical explanations are possible. According to the theory of associative

networks in memory (Bower, 1981), the activation of posttraumatic fear structures may lead to the activation of linked memory structures, such as anger structures (Riggs et al., 1992). Likewise, anxiety-provoking intrusions or memories of a traumatic event may trigger aggressive or retaliatory components of the network, such as vengeful ideas or feelings of revenge, which may perpetuate PTSD symptoms (Ehlers et al., 1998). Against this background, the activation of revenge feelings and cognitions might be interpreted as an attempt to avoid or to reduce feelings of anxiety (Foa et al., 1995). According to the cognitive PTSD model of Ehlers and Clark (2000), revenge-related cognitions (e.g., perception of injustice, attribution of responsibility, and rumination about how revenge can be achieved) can be regarded as a dysfunctional means of trauma processing that impedes the formation of a more coherent trauma memory. In addition, it has been suggested that the ruminative character of feelings of revenge serves to maintain symptoms (Ysseldyk et al., 2007).

Furthermore, our data showed a stronger association of revenge feelings and cognitions with intrusion and avoidance symptoms than with hyperarousal, indicating that the former can be regarded as avoidant coping attempts. Nevertheless, self-reported hyperarousal symptoms also proved to be influenced by revenge feelings and cognitions, whereas clinician-rated hyperarousal symptoms were more strongly associated with revenge intentions. Further research is needed to test whether the development of revenge is associated with other avoidant coping styles.

Compared to revenge feelings and cognitions, *revenge intentions* as a more behavior-related component of revenge were reported more rarely in the present study. Furthermore, they had no impact on current PTSD symptoms and reduced the predictive power of the Revenge Feelings and Cognitions Scale. This finding leads to the assumption that revenge phenomena after traumatization have to be regarded as mainly cognitive and emotional processes that do not seem to result in behavior related tendencies. It is suggested that particularly the dysfunctional emotional and cognitive aspects possibly underlying revenge, including anxiety and an-

ger, rumination, or thought avoidance, foster the maintenance of PTSD symptoms. Contrary to this, revenge intentions or factual behavior occur very rarely and are seemingly not associated with PTSD symptom occurrence or maintenance. Moreover, as already mentioned in the literature, it seems that the willingness to act on revenge has to be distinguished from feelings of revenge (Orth, 2004).

Finally, the regression model fitted better to the self-reported (IES-R) than to clinician rated (DIPS) PTSD symptoms. It can be assumed that this finding results from the fact that both the IES-R and the revenge scale are written self-reports and thereby may facilitate PTSD symptom and revenge reporting. In contrast, the oral reports given in the clinical face-to-face interview may have lead to dissimulation or minimization of symptoms. In addition, the two instruments do not measure exactly the same: The IES-R does not strictly follow the DSM criteria, especially avoidance symptoms differ between the two instruments. This explanation can also be supported by the finding of only moderate correlation between self- and clinician-rated PTSD symptoms. However, we can only speculate about the causes of this result.

Limitations of the study

The present study has several limitations. Most importantly, because of the mainly cross-sectional character of the study, no final conclusions on causality can be drawn. First of all, no data on revenge phenomena are available for the first point of measurement in 1995. Therefore, no definite answer can be derived concerning the stability of revenge phenomena over time. Moreover, we cannot determine whether revenge phenomena maintain PTSD symptoms (e.g., in the sense of a dysfunctional style of trauma processing), or whether chronic PTSD symptoms impair the ability to deal with and to overcome feelings and cognitions of revenge, or whether revenge phenomena can be regarded as an epiphenomenon of chronic PTSD. In addition, the association between revenge and PTSD may be moderated or mediated by third variables, such as ruminative tendencies (Ysseldyk et al., 2007) or extend of anger experience

(Gäbler & Maercker, 2011a) not accounted for in this study. Although, our findings can be regarded as an argument for revenge phenomena both promoting chronic PTSD and co-occurring with chronic PTSD, the results of testing the regression model indicate that revenge does contribute to the maintenance of PTSD symptoms. This assumption is also supported by the finding that current revenge phenomena were shown to be significantly associated with current but not with former PTSD symptoms as assessed in 1995. However, further longitudinal research is needed to specify the causal relationship between revenge and PTSD.

Second, we have no data on the course of PTSD between 1995 and 2008. To address this problem, we asked participants in the structured clinical interview to rate their symptomatology over the preceding 13 years. There was only one single participant who fulfilled the criteria for PTSD in 2008 and reported not having experienced full symptoms of PTSD between 1995 and 2008. Despite possible memory biases of retrospectively reported symptoms, there is sufficient evidence to assume high stability of PTSD symptoms in our sample (Maercker et al., 2011).

A third limitation concerns the recruitment strategy via advertisements in newspapers and journals in 1995, due to which the sample may have been somewhat selective. It is conceivable that individuals with high levels of posttraumatic stress who needed to talk about their experiences or with higher levels of revenge feelings or thoughts who sought relief, support, or compensation were more likely to reply to these requests, meaning that the sample overestimates both the PTSD symptoms and the revenge feelings and cognitions. Conversely, it is conceivable that only individuals who were less avoidant and more able to disclose were willing to participate in the study, meaning that the participants were more resilient. In the same vein, it might be argued that the sample of survivors in the second study in 2008 comprises the more resilient participants. However, we can only speculate about the degree and direction of selectivity in our sample.

Finally, the generalizability of results has to be discussed. The specific characteristics of our sample, including length of imprisonment, high number of traumatic events during imprisonment, continued repression after their release, lack of psychotherapeutic treatment, and the occurrence of specific factors that have been described as promoting revenge phenomena, may have contributed to both the high estimates of persistent PTSD symptoms and the high predictive power of revenge phenomena for PTSD. These factors do not necessarily exist in other samples of political prisoners and trauma survivors; therefore, the present findings cannot necessarily be generalized. Further studies are thus needed to replicate our findings.

Therapeutic implications

Establishing revenge phenomena as possible additional predictor of PTSD is not only of scientific interest, but also has important therapeutic implications. If dysfunctional revenge feelings and cognitions contribute to the occurrence of PTSD in the long term, their identification and therapeutic modification clearly has the potential to enhance the effectiveness of psychotherapy for persistent PTSD. It would seem helpful to facilitate trauma survivors' acceptance of the complexity and ambivalence of their emotions and to enable them to abandon their revenge thoughts and feelings. Important therapeutic goals in the context of revenge and PTSD thus include elaborating appropriate ways to express and to reduce the negative emotions underlying revenge phenomena, identifying and reorganizing dysfunctional revenge-related cognitions, developing more constructive coping mechanisms to regain identity coherence and self-esteem and to restore a sense of power and control, and shifting survivors' orientation from the past toward the present and the future (Gäbler & Maercker, 2011a; Horowitz, 2007). A better understanding of revenge and its impact on mental health is essential for both prevention of chronification of PTSD and successful therapeutic approaches.

ARTICLE III:
INTRAPERSONAL REVENGE AND FORGIVENESS IN THE CONTEXT OF
SEVERE TRAUMATIZATION AND PTSD

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Abstract

This study examines the relation between intrapersonal aspects of revenge and forgiveness in the aftermath of severe traumatization and their associations with PTSD. Taking into account theoretical and methodological differences in the conceptualization and assumed dimensionality of revenge and forgiveness in prior research, the aim was to explore factors underlying revenge and forgiveness while conceptually separating current mental states from general attitudes. Additionally, the specific associations between revenge and forgiveness and PTSD were assessed. Data gathered from a sample of former East German political prisoners ($N = 93$) support the hypotheses: In the context of trauma, forgiveness cannot be seen as the opposite mental state of revenge. Moreover, forgiveness, in contrast to revenge, did not contribute to the prediction of PTSD symptoms. General attitudes were also not significantly predictive of current PTSD. The findings and their implications for psychotherapeutic treatment of PTSD and for future research are discussed.

Introduction

In the recently growing debate on the relationship between revenge and forgiveness, two contrary theoretical positions can be distinguished. On the one hand, promoting forgiveness has been conceptualized as the opposite mental state of harboring feelings and thoughts of revenge (Mullet et al., 1998). On the other hand, it has been suggested that lack of revenge is a necessary but by no means sufficient precondition for forgiveness and that, although related, revenge and forgiveness should not be regarded as two poles of one psychological dimension (Brown, 2003; Thompson et al., 2005). To date, there is no final consensus on the association between revenge and forgiveness. Converse empirical findings of prior studies may stem from varying theoretical conceptions of the two phenomena, the differentiating psychological aspects included to define them, and the a priori assumption of a relation between them. In addition, the different situational contexts in which revenge and forgiveness have been investigated may have reduced comparability of results. Whereas most studies on forgiveness focused on close relationships (McCullough et al., 1998; Worthington et al., 2007) or applied hypothetical scenarios (Girard & Mullet, 1997), revenge was often investigated in the context of severe traumatic experiences, especially during the last two decades (Bayer et al., 2007; Orth et al., 2006). Forgiveness after trauma, in contrast, is a relatively new issue in the field of trauma research (Orcutt et al., 2008; Witvliet et al., 2004). Interweaving these two research trends and taking into account methodological and conceptual inaccuracies of previous studies, two research questions arise: Should aspects of intrapersonal revenge and forgiveness following trauma be regarded as separate factors or do they represent opposite poles of one psychological dimension? Likewise, are revenge and forgiveness to a comparable degree positively or negatively associated with mental health outcomes, in particular with Posttraumatic Stress Disorder (PTSD), or do they differ in this regard? To our knowledge, no other study has explicitly investigated these two research questions in combination. The present study was thus intended to shed light on this neglected facet of revenge and forgiveness and their relation to PTSD.

Theoretical background

Conceptualizing revenge and forgiveness

Given varying definitions of revenge and forgiveness used in prior studies, a clear theoretical conceptualization is needed to investigate the two phenomena. First of all, the current study focuses on the psychological, intrapersonal side of revenge and forgiveness and neglects their behavioral components. Intrapersonal forgiveness and revenge need to be conceptually distinguished from the outward-directed interpersonal process of reconciliation (Freedman & Enright, 1996; McCullough & Worthington, 1994) and from interpersonal revenge behavior (Orth, 2004). Feelings and thoughts of revenge, for instance, may motivate negative social behavior (Stuckless & Goranson, 1992); nevertheless, they are rarely acted out (Bradfield & Aquino, 1999). This explains why revenge remains a primarily intrapersonal phenomenon. In addition, traumatic experiences mainly affect mental processes such as emotions and cognitions. Therefore, the aim of the present investigation was to assess revenge and forgiveness as purely intrapersonal phenomena.

In this sense, revenge can be understood as a dysfunctional attempt to cope mentally with a transgression and its negative consequences (Orth, 2003). In keeping with cognitive appraisal theories of emotions, we define revenge as a complex emotion encompassing affective, cognitive, and motivational components (Gäbler & Maercker, 2011). Main emotions underlying revenge are hatred and anger (Stuckless & Goranson, 1992). Revenge-related cognitions may encompass negative appraisal of the transgressor or vengeful rumination (Berry et al., 2005). The motivational component refers to underlying goals such as relief from pain (Ho et al., 2002) and the restoration of justice, security, power, and self-esteem (Bayer et al., 2007; McCullough et al., 2001). Both the general individual inclination to vengeful responses and offense-specific revenge have been shown to be relatively stable over time and situations (Lopes Cardozo, 2003; McCullough et al., 1998; Orth, 2004).

We also conceptualize forgiveness as a predominantly intrapersonal phenomenon (McCullough & Worthington, 1994). Similar to revenge, forgiveness can be characterized as an attempt to cope with transgressions and as encompassing emotional, cognitive, and behavior-related components (Girard & Mullet, 1997). It can be differentiated between dispositional forgiveness and forgiveness of a specific person for a specific offense (McCullough et al., 1998), neither of which should be conflated with general attitudes toward forgiveness (Brown, 2003). Individuals may have a low tendency to forgive yet have positive attitudes toward forgiveness. The same holds for revenge: People may disapprove of revenge but nonetheless experience vengeful emotions.

Despite a certain conceptual overlap between revenge and forgiveness, conceptualizing them simply as opposites would negate some important differences. Revenge encompasses higher emotional involvement and greater intensity than forgiveness (Ho et al., 2002). Whereas forgiveness can be regarded as a conscious process, feelings and fantasies of revenge seem to be intrusive, unwanted, and uncontrollable (Horowitz, 2007). Moreover, defining forgiveness as purely relinquishing the desire for revenge and associated negative emotions (McCullough et al., 1998; Stuckless & Goranson, 1992) neglects another important aspect of forgiveness. Most authors agree that forgiveness, in addition to the release of vengeful feelings and thoughts, encompasses the development of positive feelings and thoughts towards the transgressor, such as empathy, benevolence (Brown & Phillips, 2005), and perspective-taking (Berry et al., 2005). Forgiveness can therefore be characterized as empathy-driven and active pro-social transformation of cognitions, affect, and motivation (McCullough et al., 1998).

The relationship between revenge and forgiveness

Clearly, intrapersonal revenge and forgiveness are negatively related to each other (Brown, 2004; McCullough et al., 2001). However, there are different theoretical approaches to the dimensionality underlying the two phenomena. Some authors have conceptualized revenge

and forgiveness as two poles of a single psychological dimension and proposed a revenge-versus-forgiveness factor reflecting a general tendency in people either to forgive or to seek revenge (Stuckless & Goranson, 1992; Thompson et al., 2005). In this context, the terms *unforgiveness* and *revenge* are synonymous (Thompson et al., 2005). However, the incapacity to forgive has been found to be distinct from the proposed revenge-versus-forgiveness factor (Mullet et al., 1998). Moreover, the disposition to unforgiveness has been reported to result either in grudge holding or in vengeful orientation, representing two distinct response types (Mullet et al., 2005). Others have thus posited that the relation between revenge and forgiveness is more complex than one simply being the absence of the other and that they should be considered two separate domains (Brown, 2003; 2004; Worthington & Wade, 1999). It is plausible that failing to forgive does not necessarily result in being occupied with revenge, and that not experiencing feelings or thoughts of revenge does not necessarily mean being forgiving (Brown, 2003). A number of studies support this perspective. In a sample of Iranians, two separate factors, namely Lasting Resentment and Willingness to Forgive, have been identified as underlying revenge and forgiveness (Nateghian et al., 2008). In a sample of Israeli citizens exposed to terror, re-analysis of the factor structure of the applied one-dimensional revenge-versus-forgiveness scale revealed three separate underlying factors, namely Unwillingness to Forgive, Willingness to Forgive, and Revenge (Hamama-Raz et al., 2008). Revenge and forgiveness have also been shown to differ in their courses over time (McCullough et al., 2003; Worthington, 1998). The individual level of revenge, for instance, does not increase linearly with a decrease in the tendency to forgive (Brown, 2004), indicating a relatively independent functioning of the two phenomena. Finally, different predictors have been reported for revenge and for forgiveness. Offense severity, remorse and apologies of the perpetrator (David & Choi, 2006), intent to harm (Girard & Mullet, 1997; Mullet et al., 1998), and social or political empowerment (David & Choi, 2006) have been found to predict forgiveness, whereas revenge has been

described as relatively independent of objective assault severity but associated with financial compensation and, at least transitorily, with perpetrator punishment (Orth, 2004).

The relation between revenge and forgiveness and PTSD

If revenge and forgiveness are relatively distinct phenomena, they should also differ in their associations with mental health. PTSD, one of the most common psychiatric disorders following traumatic experiences, has been shown to be related to feelings or fantasies of revenge, for example in samples of survivors of war (Bayer et al., 2007; Lopes Cardozo et al., 2003) and political violence (Gäbler & Maercker, 2011) as well as in the context of civil trauma, such as crime (Orth et al., 2006). Forgiveness is generally regarded as health-promoting (Harris & Thoresen, 2005; Karremans et al., 2003) and has been assumed to have a salutary effect on trauma sequelae (Freedman & Enright, 1996). Yet, few studies have assessed the relation between forgiveness and PTSD. In the sample cited above of Israeli citizens exposed to terror, the inability to forgive was highly correlated with PTSD (Hamama-Raz et al., 2008). In traumatized college students, offense-specific forgiveness was significantly negatively related to PTSD and partially mediated the relation between trauma exposure and PTSD symptoms (Orcutt et al., 2005; 2008). Finally, forgiveness was significantly negatively related to PTSD in a sample of combat veterans (Witvliet et al., 2004). The factors assumed to underlie the positive impact of forgiveness on mental health were in fact the same that have been shown to mediate the relation between revenge and PTSD, namely the reduction of anger (Orth et al., 2006), of the arousal level (Worthington, 1998), and of vengeful rumination (Berry et al., 2005). Thus, it can be assumed that the essential health-promoting mechanism in forgiveness is not the development of pro-social emotions and thoughts (Harris & Thoresen, 2005) but the reduction of intrapersonal revenge.

Study goals

Against this theoretical background, the first aim of our study was to investigate the structures underlying intrapersonal revenge and forgiveness. For theoretical reasons, the respective statistical analyses were conducted separately for current revenge and forgiveness and for attitudes toward revenge and forgiveness. We hypothesized that revenge and forgiveness do not load on a single factor and that the two phenomena are not just opposite poles of one dimension. The second aim was to investigate the specific relationship between the identified dimensions underlying revenge and forgiveness and PTSD. Assuming that a positive effect of forgiveness on PTSD may result merely from the lack of revenge rather than from the pro-social change of forgiveness, we hypothesized that in contrast to revenge forgiveness will have little or no predictive power for PTSD.

Methods

Study participants were highly traumatized former political prisoners in East Germany. Their traumatic experiences during imprisonment comprised physical and psychological violence, such as deprivation of nourishment and sleep, solitary or dark confinement, and threats to life (Gäbler & Maercker, 2011). The present data is part of a follow-up study in 2008 (Maercker et al., 2011) that reinvestigated the participants of the 1995 study in Dresden, former East Germany (Maercker & Schützwohl, 1997). Participants in the 1995 study had been recruited via newspaper advertisements and societies of former political prisoners. In 2008, same participants were contacted via mail and invited to participate in a follow-up. The study was approved by the Ethics Committee of the German Society of Psychology (DGPs). Of the original 146 participants of the first study in 1995, 93 joined the second assessment (25 had died; 16 did not answer the request or refused participation mainly because of severe health impairments such as previous heart attacks; 12 could not be located). Those who did not answer or refused participa-

tion in 2008 did not differ in their PTSD symptoms in 1995 from those who participated in both studies (Intrusion: $F = 0.16$; Avoidance: $F = 3.55$; Hyperarousal: $F = 1.12$, ns).

Data collection took place at the psychiatric hospital of the University of Dresden, or in the hometowns of participants who were not mobile. Each interview session lasted approximately three hours. Mean duration of imprisonment was 29.3 months ($SD = 28.5$, range 2–153); mean age at time of incarceration was 25 years ($SD = 7.8$, range 15–49.5). At time of data collection, on average 36.8 years ($SD = 11$, range 18.6–55) had passed since release from prison. Participants' ages ranged from 40 to 85 years ($M = 64.4$, $SD = 10.7$). The gender ratio was approximately 1:5 (female: 16.1%, male: 83.9%), reflecting the gender ratio of former East German political prisoners. The educational level was distributed as follows: 24.2% middle school/8th grade, 46.2% high school/10th grade, 7.7% high school/12th grade, and 20.9% university degree. 21.1% of the interviewees were full-time employed, 72.3% were retired or received invalidity pension, and 6.6% were unemployed or part time employed.

Measures

Participants were explicitly asked to refer to the event of political imprisonment when answering the questionnaires. Thoughts, fantasies, and feelings of revenge were assessed by the three-item Revenge Scale (Orth, 2003; Cronbach's $\alpha = .94$ in this study). Due to the fact that this scale encompasses only feelings and cognitions of revenge and that no adequate scale on revenge intentions was available from prior research, we added two self-developed items to this scale tapping revenge-related plans and intentions (Cronbach's $\alpha = .87$). Participants rated the frequencies of their feelings, cognitions, and intentions of revenge during the preceding four weeks (0–*not at all* to 5–*very often*). To tap general attitudes, the nine items of the unidimensional Vengeance Scale (Stuckless & Goranson, 1992) that explicitly ask about attitudes toward revenge and forgiveness were used (1–*not agree at all* to 7–*totally agree*; Cronbach's $\alpha = .73$). The four-item Tendency to Forgive Scale (TTF; Brown, 2003; Cronbach's $\alpha = .78$ in this study)

was applied to assess the individual tendency to engage in forgiveness. The six-item Attitudes toward Forgiveness Scale (ATF; Brown, 2003; Cronbach's $\alpha = .60$ in this study) was used to measure the extent that forgiveness was advocated, independent of the context and the actual extent of current forgiveness (Brown, 2003). On both scales, respondents rated statements concerning their forgiveness (1–*strongly disagree* to 7–*strongly agree*). The 22-item Impact of Event Scale–Revised (IES-R, German translation: Maercker & Schützwohl, 1998) measured the participants' frequencies of PTSD symptoms during the previous seven days (0–*not at all* to 5–*often*). Sum scores were computed separately for each subscale: Intrusion (7 items; Cronbach's $\alpha = .91$), Avoidance (8 items; Cronbach's $\alpha = .81$), and Hyperarousal (7 items; Cronbach's $\alpha = .91$ in this study). To control for further trauma, additional traumatic events and their subjective degree of severity were explicitly solicited. All participants rated their political imprisonment as being the most grave and traumatizing experience in their lives (compared to e.g, divorce, death of a loved one, or severe illness). To control for established predictors of PTSD, information on gender, age, marital and financial status, and social support were gathered. Lack of social support is well known as an important risk factor for PTSD (Brewin et al., 2000). Perceived social support was assessed with the 14-item version of the Social Support Questionnaire (Fydrich et al., 2007; Cronbach's $\alpha = .94$ in this study; 0–*not at all true* to 5–*absolutely true*). Finally, participants rated the subjective severity of their worst experience during imprisonment (1–*not at all severe* to 7–*extremely severe*).

Statistics

Data were analyzed using SPSS18 (2008). Two principal component analyses (PCA) were conducted to identify factors underlying revenge and forgiveness. The first PCA comprised items on current feelings, cognitions, and intentions of revenge and on forgiveness. The Revenge Scale items, the two items on revenge intentions, and the TTF items were entered. The second PCA included items tapping attitudes toward revenge and forgiveness. The nine atti-

tude-related Vengeance Scale items and the ATF items were entered. Due to insufficient item intercorrelations ($< 50\%$ significant correlations), the first Vengeance Scale item and the second and fourth ATF items—the latter of which were also responsible for the low internal consistency of the ATF—were excluded from the second PCA. All items were z-standardized. On the assumption that the expected factors are related, we used oblique rotation. The rotated factor loadings (pattern matrices), the eigenvalues, and the internal consistencies of the factors are reported. Subsequently, stepwise hierarchical regression analyses tested the predictive power of the resulted factors for current PTSD symptoms. The literature advises against using an IES-R total score because of an assumed change of the amount of intercorrelations between the subscales over time (Maercker & Schützwohl, 1998). Therefore, the three subscales of the IES-R were used as dependent variables in the regression analyses. To control for standard predictive variables for PTSD, the incremental validities of the factors as well as standard predictors (i.e., PTSD symptoms in 1995, gender, age, financial situation, and social support) were tested. The objective income per month was unrelated to PTSD symptoms; therefore, the subjective satisfaction with the financial situation was preferred as a predictor variable. Controlling for established predictors of PTSD ensures that the specific contributions of the factors of interest are captured (Gäbler & Maercker, 2011). The degree of explained variance, the incremental validities, and the standardized beta values are reported. Data met the preconditions for these analyses.

Results

Descriptive statistics

Descriptive statistics for the scales applied in the analyses are shown in Table 7.

Table 7 Descriptive statistics for the applied scales

	IES-R Intrusion	IES-R Avoidance	IES-R Hy- perarousal	Revenge Scale	Revenge Intentions	Vengeance Scale	TTF	ATF
<i>M</i>	2.72	1.80	2.24	1.58	1.72	3.10	3.87	4.16
<i>SD</i>	1.49	1.19	1.60	1.50	2.60	0.95	1.25	0.91

Factors underlying revenge and forgiveness

For the first PCA, the KMO measure of .82 indicated an adequate sample size. All KMO values for individual items were $> .74$, which is above the acceptable limit of .50 (Field, 2009). Bartlett's test of sphericity ($\chi^2 = 514.19$, $p < .001$) indicated sufficiently large correlations between items. Three factors had eigenvalues greater than 1 (Kaiser's criterion) and together explained 78.64% of the variance. The result is in concordance with the number of factors as indicated by the scree plot. Factor one refers directly to revenge, encompassing thoughts, feelings, fantasies, plans, and intentions of revenge. We labeled it *Revenge*. The second factor summarizes two items referring to tendencies of continued thinking about the trauma and grudge harboring. It represents a mental state of not having come to terms with trauma, in which the negative emotions and cognitions, however, do not reach the intense and disproportionate quality of revenge. This factor was labeled *Grudge holding*. The third factor encompasses items referring to the individual tendency to forgive and to the overcoming of experienced injustice and harm and thus was labeled *Forgiveness*. The Revenge factor explained the highest and the Forgiveness factor the lowest amount of item variance. As the factor solution indicates, being vengeful, harboring negative feelings and thoughts, and being forgiving represent relatively independent aspects of psychological functioning. Medium correlations between the three factors ($r_{12} = -.32$; $r_{13} = -.27$; $r_{23} = .35$) support the assumption of independent but related factors. Table 8 shows the factor loadings after oblique rotation.

Table 8 Summary of PCA results for items on current revenge and forgiveness

Item	Rotated factor loadings		
	<i>Revenge</i>	<i>Grudge holding</i>	<i>Forgiveness</i>
“How often did thoughts come to mind involuntarily about doing something to the perpetrator?”	.91	.10	-.09
“Did you experience feelings of revenge toward the perpetrator/s?”	.89	.06	-.08
“How often did you fantasize about getting back at the perpetrator/s for what he/she/they did to you?”	.89	.02	-.11
“Have you ever seriously planned to take revenge in any form on the person/s responsible?”	.87	-.09	.18
“If you had the possibility, would you harm the person/s responsible in order to take revenge?”	.82	-.09	.07
“If someone wrongs me, I often think about it afterward.”	.00	-.94	.11
“I have a tendency to harbor grudges.”	.03	-.64	-.30
“When someone hurts my feelings, I tend to get over it quickly.”	-.01	-.02	.94
“When people wrong me, my approach is just to forgive and forget.”	-.15	.44	.56
Eigenvalues	4.30	2.36	2.11
α	.93	.61	.76
% of the total variance	51.47	18.83	8.34

Note. $N = 90$.

For the second PCA, the sampling adequacy was verified (KMO measure =.80; all KMO values for individual items .72 to .89). According to Bartlett’s test of sphericity item intercorrelations were sufficiently large ($\chi^2 = 355.01$, $p < .001$; $r_s \leq .65$, p_s from ns to $< .001$). Again, three factors showed eigenvalues greater than Kaiser’s criterion of 1. In combination they explained 58.63% of the variance. The three-factor solution was supported by the scree plot.

Items clustering on the first factor refer to the judgment of revenge as morally wrong and to the abandonment of a vengeful attitude in favor of a merciful one. The factor represents a position that rejects revenge but does not include pro-forgiveness aspects and was labeled *Rejecting revenge*. This factor explained the highest amount of item variance. The second factor represents a pro-revenge attitude encompassing explicit approval of the right to get even and disapproval of forgiveness. Accordingly, the factor was labeled *Advocating revenge*. The third factor refers directly to a pro-forgiveness attitude, including approval of discarding perceived wrongs and an evaluation of forgiveness as a moral virtue and admirable trait. This factor was labeled *Advocating forgiveness*. Table 9 shows the factor loadings after oblique rotation.

Table 9 Summary of PCA results for items on attitudes toward revenge and forgiveness

Item	Rotated factor loadings		
	<i>Rejecting revenge</i>	<i>Advocating revenge</i>	<i>Advocating forgiveness</i>
"Revenge is morally wrong."	.86	-.04	-.06
"It is always better to forego revenge."	.81	-.04	-.01
"People who always insist on revenge are repulsive."	.77	-.02	.09
"In general, it is better to be merciful than to seek revenge."	.63	-.03	.19
"Forgiveness is a sign of weakness."	.12	.75	-.06
"Honor demands getting back at someone who hurt you."	-.07	.72	-.07
"Revenge is sweet."	-.49	.59	.12
"There is nothing wrong with paying back someone who hurt me."	-.19	.48	-.09
"It is admirable to be a forgiving person."	-.09	-.20	.82
"People should work harder than they do to let go of the wrongs they have suffered."	-.02	-.02	.67
"I believe that forgiveness is a moral virtue"	.06	-.37	.67
"It's always better to turn the other cheek."	.19	.30	.55
Eigenvalues	3.55	2.52	2.81
α	.82	.68	.68
% of the total variance	37.06	11.59	9.98

Note. Item wordings are retranslations of the German version of the Vengeance Scale; $N = 90$.

The relatively low factor loading of the fourth item assigned to this factor can be explained by its content that differs from the scale content: Turning the other cheek, in our opinion, should not be confounded with a pro-forgiveness attitude. Deleting this item increased internal consistency (Cronbach's $\alpha = .74$). Findings of the second PCA indicate that approving revenge, refusing revenge, and endorsing forgiveness are relatively independent attitudinal processes. Again, the correlations between the three factors were of low to medium strength ($r_{12} = -.26$, $r_{13} = .41$, $r_{23} = -.21$).

Relations between revenge and forgiveness and PTSD

Consistent with the finding that revenge and forgiveness are distinct psychological phenomena, differential associations with PTSD symptoms were expected. A regression equation obtained from the first study in 1995 (Maercker & Schützwohl, 1998) predicted a current PTSD diagnosis for 25.3% of the participants. To test the predictive power of the factors derived from the two PCAs for current PTSD symptoms, the factors were entered into two regression models, one for the factors underlying current revenge and forgiveness and one for attitudinal factors.

Of the factors obtained from the first PCA, only Revenge was significantly predictive of PTSD symptoms. Neither Grudge holding nor Forgiveness contributed significantly. As hypothesized, attitudes toward revenge and forgiveness represented by the factors from the second PCA also did not significantly contribute to the prediction of PTSD. The three factors derived from the first PCA explained 14.3% of the variance in current Intrusion (Revenge: 9.8%, $\beta = 0.22$, $p < .05$; Grudge holding: 3.9%, $\beta = 0.17$, ns; Forgiveness: 0.5%, $\beta = -0.10$, ns), 9.4% in current Avoidance (Revenge: 6.8%, $\beta = 0.25$, $p < .05$; Grudge holding: 1.3%, $\beta = 0.19$, ns; Forgiveness: 1.2%, $\beta = 0.14$, ns), and 15.4% in Hyperarousal (Revenge: 13.7%, $\beta = 0.32$, $p < .01$; Grudge holding: 1.7%, $\beta = 0.13$, ns; Forgiveness: 0%, $\beta = -0.01$, ns). The three factors obtained from the second PCA explained 3.9% of the variance in Intrusion (Rejecting revenge: 0.1%, $\beta = -0.06$, ns; Advocating revenge: 3.7%, $\beta = 0.20$, ns; Advocating forgiveness: 0.1%, $\beta = -0.03$, ns), 11.1% in Avoidance (Rejecting revenge: 5.5%, $\beta = 0.07$, ns; Advocating revenge: 3.9%; $\beta = 0.32$, $p < .05$; Advocating forgiveness: 1.7%, $\beta = 0.16$, ns), and 5.6% in Hyperarousal (Rejecting revenge: 0.1%, $\beta = -0.11$, ns; Advocating revenge: 5.5%, $\beta = 0.28$, $p < .05$; Advocating forgiveness: 0.1%, $\beta = 0.03$, ns).

To corroborate these findings, two additional regression analyses were conducted. First, the standard predictive variables for PTSD (see *Measures*) were entered stepwise into the analyses, followed by the factors from the two PCAs in the final steps. Controlled for standard predictive variables, Revenge was no longer significant for the prediction of Intrusion but remained significant for Avoidance and Hyperarousal. For Intrusion, the full set of predictor variables, including the factors from the first PCA, explained 55.7% of the variance. Revenge explained an additional insignificant 2%; Grudge holding and Forgiveness did not explain any additional variance. For Avoidance, the full model explained 34.4% of the variance. Revenge accounted for a significant amount of variance (4.1%; $p < .05$); Grudge holding and Forgiveness did not account for unique variance (0.3%, ns; 1.2%, ns). For Hyperarousal, the full model accounted for 56.5% of the variance. Revenge significantly contributed to the prediction (5.7%,

$p < .01$); Grudge holding and Forgiveness did not explain incremental variance (0.1% and 0.2%, ns). Entering Grudge holding and Forgiveness in the last two steps did not reduce the predictive power of Revenge, confirming the relative independence of the factors. Table 10 shows the results obtained in the last regression step of the first controlled regression analysis.

Table 10 Predictive power of the factors from the 1st PCA for current PTSD symptoms

	Self-reported symptoms (IES-R) 2008					
	Intrusion		Avoidance		Hyperarousal	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.43***		.22***		.39***	
Constant						
PTSD 1995†		0.52***		0.33**		0.49***
Step 2	.00		.00		.00	
Subjective severity		0.06		-0.02		0.03
Step 3	.08**		.05		.09**	
Gender		0.21**		0.10		0.22**
Age		0.18*		0.19		0.07
Financial satisfaction		-0.17*		-0.18		-0.21**
Step 4	.04*		.03		.02	
Social Support		-0.19*		-0.13		-0.15
Step 5	.02		.04*		.06**	
Revenge		0.15		0.22*		0.27**
Step 6	.00		.00		.00	
Grudge holding		-0.03		0.13		-0.03
Step 7	.00		.01		.00	
Forgiveness		-0.03		0.15		0.04
Total R^2	.56		.34		.57	

Note. *** $p < .001$ ** $p < .01$, * $p < .05$; †appropriate IES-R subscale; $N = 86$.

For Intrusion, the full set of predictor variables, including the factors from the first PCA, explained 55.7% of the variance. Revenge explained an additional insignificant 2%; Grudge holding and Forgiveness did not explain any additional variance. For Avoidance, the full model explained 34.4% of the variance. Revenge accounted for a significant amount of variance (4.1%; $p < .05$); Grudge holding and Forgiveness did not account for unique variance (0.3%, ns; 1.2%, ns). For Hyperarousal, the full model accounted for 56.5% of the variance. Revenge significantly contributed to the prediction (5.7%, $p < .01$); Grudge holding and Forgiveness did not explain incremental variance (0.1% and 0.2%, ns). Entering Grudge holding and Forgiveness in

the last two steps did not reduce the predictive power of Revenge, confirming the relative independence of the factors.

In the second regression analysis, attitudes toward revenge and forgiveness represented by the factors from the second PCA remained insignificant in predicting PTSD symptoms. The full model explained 55.1% of the variance in Intrusion, 33.9% of the variance in Avoidance, and 52.6% of the variance in Hyperarousal. When controlled for standard predictive variables for PTSD, the three attitudinal components contributed only 0% to 3% (ns) to the explanation of the variance in PTSD symptoms. Results as obtained from the last step of the second controlled regression analysis are presented in Table 11.

Table 11 Predictive power of the factors from the 2nd PCA for current PTSD symptoms

	Self-reported symptoms (IES-R) 2008					
	Intrusion		Avoidance		Hyperarousal	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.42***		.22***		.39***	
Constant						
PTSD 1995†		0.58***		0.34**		0.51***
Step 2	.00		.00		.00	
Subjective severity		0.05		-0.00		0.03
Step 3	.08**		.05		.09**	
Gender		0.24**		0.16		0.25**
Age		0.12		0.15		0.03
Financial satisfaction		-0.15		-0.14		-0.20*
Step 4	.04*		.03		.02	
Social Support		-0.19*		-0.11		-0.13
Step 5	.02		.03		.01	
<i>Rejecting revenge</i>		0.04		0.06		-0.00
Step 6	.00		.01		.01	
<i>Advocating revenge</i>		0.08		0.23		0.18
Step 7	.01		.01		.01	
<i>Advocating forgiveness</i>		0.13		0.15		0.11
Total R^2	.55		.34		.53	

Note. ***p < .001 **p < .01, *p < .05; †appropriate IES-R subscale; N = 86.

Results of the regression analyses indicate that specifically intrapersonal revenge phenomena contribute to the prediction of current PTSD even when controlled for standard predictors. Neither the tendency to forgive nor attitudinal aspects of revenge and forgiveness seemed relevant in the long run for PTSD symptomatology after severe traumatization.

Discussion

The present findings indicate that intrapersonal revenge and forgiveness after severe trauma are not simply opposite mental states that are subsumable under a single psychological dimension. For each PCA, three separate factors were identified that reflect aspects of current revenge and forgiveness as well as attitudes toward revenge and forgiveness. The factors found to underlie current states are comparable to factors described for a sample of Israeli citizens exposed to terror (Hamama-Raz et al., 2008): Revenge and Forgiveness in our study appear to conform to Revenge and Willingness to Forgive, as reported earlier, whereas our Grudge holding factor seems comparable to Unwillingness to Forgive. The comparable factor solutions may be due to similar trauma characteristics of the two samples. Further studies should determine whether these factors typically underlie revenge and forgiveness in victims of type II trauma. In contrast to Revenge, neither Forgiveness nor general attitudes significantly contributed to the prediction of current PTSD in our sample. Our findings caution against both conflating intrapersonal revenge and forgiveness phenomena and conflating current mental states and general attitudes toward revenge and forgiveness. Especially when studying health effects, it is crucial to differentiate between the reduction of intrapersonal revenge and the promotion of forgiveness (Worthington & Wade, 1999). Several aspects of the current findings deserve comment.

First, Revenge was the only factor significantly predicting current PTSD after controlling for standard predictive variables. Thus, revenge can be viewed as a risk factor for PTSD. Generally, feelings and thoughts of revenge can be characterized as a dysfunctional way of trauma processing that prevents the victim from recovering from the trauma (Ehlers & Clark, 2000). Preoccupation with revenge fantasies may hamper the formation of a coherent trauma memory, and thus contribute to the maintenance of PTSD (Ehlers & Clark, 2000; Orth et al., 2006). In the current study, revenge was associated with enhanced avoidance and hyperarousal symptoms but not with intrusion. This finding is in line with prior research. It has been shown

that retaliatory responses are related to an enhanced arousal level (Witvliet et al., 2001). In addition, the activation of certain memory components associated with anger and aggression has been stated to maintain hyperarousal and thus to perpetuate PTSD symptoms (Ehlers et al., 1998). It seems therefore plausible that the experience of intense feelings of revenge and the cognitive engagement in revenge fantasies lead to increased hyperarousal. Furthermore, revenge has been described in terms of a coping attempt to avoid the more uncomfortable emotion of anxiety (Orth et al., 2006). Avoidant response styles have been shown to be related to higher PTSD symptomatology (Orcutt et al., 2005). Thus, it seems further plausible that intrapersonal revenge is associated with increased avoidance in traumatized patients. Finally, fantasizing about revenge may suppress other trauma-related memories, which may explain why intrapersonal revenge does not result in enhanced intrusions. However, this explanation is speculative. Future research should examine the specific relations between revenge and the different aspects of PTSD. In sum, given the cross-sectional nature of our data, no final conclusions on causality underlying revenge and PTSD symptoms can be drawn. It may also be possible that feelings and thoughts of revenge stem from PTSD symptomatology or that they represent epiphenomena of PTSD (for detailed discussion, see Gähler & Maercker, 2011). Longitudinal studies that track changes in PTSD in relation to changes in intrapersonal revenge over time are clearly needed to augment the validity of the cross-sectional and retrospective data reported here.

Second, Grudge holding was found to be only moderately related to Revenge. Extending the argument that forgiveness should not be confused with forgetting (Enright & Fitzgibbons, 2000), this finding indicates that the absence of revenge should also not be confused with forgetting; People may harbor grudges without being vengeful. If a desire for revenge is motivated by rumination (McCullough et al., 2001), grudge holding—which comprises ruminative aspects—can be regarded as a precondition for the development of revenge that is of lower emotional and cognitive intensity. Unlike Revenge, Grudge holding did not significantly contribute

to the prediction of current PTSD. The specific relation between grudge holding and revenge merits future studies. Third, Forgiveness did not contribute to the prediction of current PTSD. Several explanations for this finding exist. The reported tendency to forgive might reflect a kind of pseudo-forgiveness that is the outward-expression of forgiveness although true inward-forgiveness has not occurred (Enright & Zell, 1989). Expression of forgiveness purely motivated by social or religious pressure or by socially desirable response behavior would thus have no health-improving effect. Furthermore, health benefits of forgiveness may occur within close relationships, but not when severe traumatization is caused by unknown perpetrators (Karremans et al., 2003). A decrease in avoidance motivation after forgiveness, for instance, has been reported solely for close relationships, in which restoration of the relationship is assumed to motivate forgiveness (McCullough et al., 1998). Thus, forgiveness processes in close relationships cannot be transferred directly to forgiveness processes that involve unknown perpetrators (Worthington et al., 2007). Finally, the relatively low amount of item variance explained by Forgiveness indicates that forgiveness is irrelevant to victims of severe type II trauma. In addition, the second PCA also revealed that attitudes toward revenge and forgiveness are more complex than simply favoring either. According to our results, not accepting revenge does not necessarily mean favoring forgiveness, and not favoring forgiveness does not necessarily mean favoring revenge. This finding indicates an independent functioning of revenge and forgiveness on the level of general attitudes as well.

Limitations

Although in the present study it has been controlled for further trauma, it cannot fully be ruled out that other stressful life events, which had occurred in the meantime since release from prison, may have led to cumulated PTSD symptomatology or to delayed onset of PTSD symptoms. Moreover, the current study did not explicitly involve external variables known to influence vengeful or forgiving responses. However, the investigated sample can be considered rela-

tively homogenous with regards to such variables. Causing distress and suffering was explicitly intended (Girard & Mullet, 1997) because of the state-organized cause of trauma in the sample. To our knowledge, those responsible did not apologize and were not punished (Orth, 2004). The cancellation of consequences (Mullet et al., 1998) is generally low in former East German political prisoners who still suffer from physical handicaps, lack of societal acknowledgement, and low financial compensation (Spitzer et al., 2007). Negative influences on the quality of our findings through differences in these variables can thus be largely ruled out.

Moreover, the specific sample characteristics may limit the generalizability of the results: The high trauma severity and persistent low social acknowledgement and compensation may have resulted in especially high levels of feelings and fantasies of revenge and in a low tendency to forgive. Generally, forgiveness in the aftermath of political changes has been suggested to be different from other contexts of forgiveness, for example due to the transgression characteristics and the multiple consequences (David & Choi, 2006). Further investigations may prove the transferability of our results to other trauma samples. Finally, the scales applied in the current study, especially the scales assessing forgiveness, may have caused some limitations. First, although the conceptualization of forgiveness also encompasses affective, cognitive, and motivational aspects, these were not addressed. The information provided on forgiveness—in contrast to revenge—and its relation to PTSD is thus restricted. Second, even though proposed in the literature (McCullough et al., 1998; Berry et al., 2001), the present study made no explicit distinction between offense-specific and dispositional forgiveness. The TTF is mainly intended to measure a general tendency to forgive rather than current forgiveness. However, given the specific trauma characteristics as well as the length of time since trauma in our sample, this scale was favored over a measure of forgiveness of a specific person for a single transgression. Moreover, given the generally high correlation between state forgiveness of severe offenses and dispositional forgiveness (Brown, 2003; Brown & Phillips, 2005), we assume that the TTF reflects the individual inclination to forgive as established in the aftermath of

trauma. Third, ATF items seem to be heterogeneous in terms of the content being measured. Internal consistency of the scale increased to an acceptable level only when two of the three conversely formulated items were deleted, indicating that those items did not assess the opposite of a pro-forgiveness attitude. There is clearly a need for further conceptual clarification and an elaborated theoretical foundation when operationalizing revenge and forgiveness. Yet, despite these limitations, the present study provides initial insight into the relation between revenge and forgiveness in the context of severe traumatization and PTSD.

Therapeutic implications

Several recommendations for psychotherapeutic treatment of PTSD may be gathered from the current findings. Substantiated knowledge about revenge in the aftermath of severe trauma as a possible maintaining factor in PTSD is essential. The insignificant contribution of forgiveness to the prediction of PTSD in our sample implies that it has no health-improving effect on highly traumatized people, which calls into question the necessity of forgiveness interventions in trauma therapy. Promoting forgiveness that includes consideration of the perpetrators' life and history and the development of empathy and compassion toward them (Freedman & Enright, 1996) therefore should not be considered an essential therapeutic goal when treating trauma patients. Rather, focusing on the release of vengeful fantasies and emotions and enabling the patients to relinquish obsessive vengeful emotions and thoughts promises to be more effective for the process of recovery from trauma. Revenge-reducing therapeutic elements may encompass working through dysfunctional revenge cognitions, experiencing and analyzing vengeful emotions, and finding more functional ways to satisfy motives. Within the proposed forgiveness interventions (Enright & Fitzgibbons, 2000), the early stages that aim at revenge reduction seem useful, whereas the explicit promotion of forgiveness as targeted in the later steps can be omitted. We hope that the current findings spark a sophisticated debate on revenge-reducing versus forgiveness-promoting steps in trauma therapy.

OVERALL DISCUSSION AND RESEARCH PERSPECTIVES

The three articles in the current thesis present both a theoretical overview of revenge, its relation to PTSD, and the emotional, cognitive, and motivational factors underlying revenge, and an empirical study that investigated several aspects of revenge after trauma. In each of the articles, the relevant key points are considered; the overall discussion summarizes the findings reported in the three articles and discusses several aspects of the results, the applied methods, and limitations in greater detail. Future research perspectives and therapeutic and societal implications that arise from the presented study are also indicated.

Summary of the current findings

The presented work investigated different facets of revenge after traumatic experiences and their relation to PTSD. Each of the three articles contributes to recent trauma research by providing new knowledge on a topic that has been insufficiently investigated to date.

The first article, *Revenge after trauma: Theoretical outline*, includes recent theoretical approaches and findings on revenge. The main aim of this article was to deduce a process model on revenge based on a review of the psychological literature. This model suggests that revenge phenomena and PTSD are related to each other and further hypothesizes that specific emotions and cognitions contribute to the occurrence of revenge. The emotions included in the model are anger, hatred, and—in the context of PTSD, in which the first article was embedded—also bitterness. Cognitive aspects assumed to underlie the occurrence of revenge are attributional processes, general attitudes, and values. Moreover, certain motivation-related factors, namely self-esteem and self-efficacy, are assumed to moderate the effects of the proposed emotions and cognitions on revenge and the relation between revenge and forgiveness. Finally, the model suggests that forgiveness is related to revenge and that forgiveness is also influenced by certain emotions and cognitions, although these are not specified. Thus, the first article can be seen as a theoretical introduction to the little investigated issue of revenge after trauma. This

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article provided the theoretical basis for the two subsequent articles, which empirically investigated intrapersonal aspects of revenge and their associations with PTSD and with forgiveness.

The second article, *Revenge phenomena and PTSD in former East German political prisoners*, presents findings from the empirical investigation of revenge as a predictor for PTSD symptomatology in a sample of former East German political prisoners who had experienced multiple traumatic events during their imprisonment (see *Political imprisonment in the former GDR*). The main hypothesis was that in addition to established predictive variables for PTSD, the different aspects of revenge that were assessed explain variance in current PTSD symptoms. Standard predictors included in the analyses were subjective trauma severity, age, sex, satisfaction with financial status, PTSD symptoms in 1995, and social support. Data were analyzed by multiple hierarchical regression analyses. Consistent with the hypothesis, results demonstrate that feelings and cognitions of revenge explain significant amounts of variance in current self-reported Intrusion, Avoidance, and Hyperarousal, and in clinician-rated Intrusion and Avoidance. In contradiction to the hypothesis, however, revenge intentions did not significantly contribute to the prediction of current PTSD symptoms. Thus, the hypothesis was partly supported. Findings presented in this article highlight the important role of feelings and thoughts of revenge for PTSD symptomatology in the long run after trauma. Due to their predictive power for PTSD, feelings and cognitions of revenge were interpreted in terms of PTSD-maintaining dysfunctional phenomena.

The third article, *Intrapersonal revenge and forgiveness in the context of severe traumatization and PTSD*, assessed the dimensionality of revenge and forgiveness after trauma and their specific associations with PTSD. Data were derived from the same sample of former political prisoners as in the second article. With the help of principal component analyses, the factor structure of current revenge and forgiveness and of general attitudes toward revenge and forgiveness were analyzed. The analyses revealed three factors underlying current phenomena, labeled Revenge, Grudge holding, and Forgiveness, and three factors underlying general atti-

tudes toward revenge and forgiveness, labeled Rejecting revenge, Advocating revenge, and Advocating forgiveness. This supported the hypothesis that revenge and forgiveness are distinct phenomena that cannot be seen as two poles of a single psychological dimension. In a second step, the predictive power of each of the revealed factors for current self-reported PTSD was tested by using multiple hierarchical regressions while controlling for standard predictive variables. It could be shown that the Revenge factor significantly contributed to predicting Avoidance and Hyperarousal. In contrast, the factors Forgiveness and Grudge holding had no significant influence on PTSD symptoms, confirming the hypothesis that forgiveness does not explain variance in current PTSD. Furthermore, as hypothesized, the three factors underlying general attitudes did not contribute to current PTSD symptoms. In sum, findings presented in the third article show that revenge and forgiveness are not dichotomous but entail more complex mental processes. Trauma victims cannot simply be regarded as being either vengeful or forgiving or as favoring either revenge or forgiveness. Findings of the third article also indicate that forgiveness after trauma is not necessarily health-improving with regards to PTSD symptoms.

Table 12 summarizes the content, hypotheses, and findings of the three articles presented in this work.

Table 12 Summary of the results

Content	Hypotheses	Predictor variables	Outcome/ Depend-ent variables	Confirmation of the hypotheses
Article I, Context: Theoretical overview and model of revenge				
Theoretical outline on intrapersonal revenge	Emotions, cognitions, motives underlie intrapersonal revenge phenomena and mediate the relation between them and PTSD			No data available, Theoretical model that was not tested
Article II, Context: Intrapersonal revenge as predictor for PTSD symptoms				
Investigation of intrapersonal revenge phenomena as predictor for current PTSD symptoms	Revenge feelings and cognitions and revenge intentions contribute to the prediction of current PTSD symptoms	Self reported PTSD symptoms in 1995, Standard predictive variables: Subjective trauma severity, Demographic variables, Social support, Revenge feelings and cognitions, Revenge intentions	Self reported PTSD symptoms in 2008	Yes, feelings and cognitions of revenge contribute to the prediction of current self-reported Intrusion, Avoidance, and Hyperarousal;
		Clinician-rated PTSD symptoms in 1995, Standard predictive variables	Clinician-rated PTSD symptoms in 2008	No, revenge intentions do not contribute to the prediction of current PTSD symptoms Yes, feelings and cognitions of revenge contribute to the prediction of current clinician-rated Intrusion and Avoidance, but not to the prediction of Hyperarousal;
				No, revenge intentions do not contribute to the prediction of current clinician-rated PTSD symptoms
Article III, Context: Factor structure of revenge and forgiveness; predictive power of revenge and forgiveness factors for PTSD symptoms				
Investigation of the factors underlying intrapersonal revenge and forgiveness	Intrapersonal revenge and forgiveness do not load on a single factor	Current revenge phenomena, Current tendency to forgive, General attitudes toward revenge, General attitudes toward forgiveness	Factors underlying the several aspects of revenge and forgiveness	Yes, three-factor solution for current revenge and forgiveness: <i>Revenge</i> , <i>Grudge holding</i> , and <i>Forgiveness</i> ; Three-factor solution for general attitudes toward revenge and forgiveness: <i>Rejecting revenge</i> , <i>Advocating revenge</i> , and <i>Advocating forgiveness</i>

Investigation of the specific relationship between factors underlying revenge and forgiveness and PTSD	Revenge contributes to the prediction of current self-reported PTSD symptoms	Revenge, Grudge holding, Forgiveness, standard predictive variables for PTSD	Self reported PTSD symptoms in 2008	Yes, Factor Revenge contributes to current self-reported Avoidance and Hyperarousal, but not to Intrusion
	Forgiveness has no or only little predictive power for self-reported PTSD symptoms			Yes, Forgiveness (as well as Grudge holding) does not contribute to the prediction of PTSD symptoms
	General attitudes toward revenge and forgiveness do not necessarily contribute to the prediction of current PTSD symptoms	Rejecting revenge, Advocating revenge, Forgiveness, Standard predictive variables for PTSD	Self reported PTSD symptoms in 2008	Yes, attributional factors do not contribute to the prediction of self-reported PTSD symptoms

Emotional, cognitive, and motivational components of revenge

The self-developed revenge model presented in the first article aims at illustrating emotional, cognitive, and motivation-related components assumed to underlie revenge. Before it, no theoretical model existed that describes intrapersonal processes of revenge and the association between revenge and PTSD. The proposed model can therefore be understood as an attempt to integrate recent knowledge on revenge and to provide a working basis for the empirical investigation of revenge after trauma and its relation to PTSD symptoms. However, this model was developed on the basis of purely theoretical considerations. It does not entail a comprehensive list of components nor does it represent the empirical facts. Instead it provides a theoretical approximation to the relationship between revenge and PTSD and the complex mental processes that may be associated with revenge.

The model was not intended to be proved in the current work but was conceptualized as a theoretical elucidation of possible intrapersonal processes that may contribute to the development of revenge. In the presented study, data were therefore not gathered for each variable proposed in the model. With the current data, however, it was possible to test single pathways of the model or single relations between some of the model components in order to gain a first impression of the empirical validity of the theoretical assumptions. As is shown next, results

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revealed from preliminary statistical analyses of the data available from the current sample of former East German political prisoners partly support the suggested relations.

Cognitive variables

In the investigated sample, attitudes toward revenge assumed to underlie current revenge phenomena were indeed found to correlate to a moderate degree with current revenge. A general positive attitude toward revenge may function as a precondition for the development of revenge after trauma, although it cannot fully explain its occurrence. According to the theoretical considerations outlined in the first article, additional factors, namely specific emotions, motives, and situational variables may influence the development of revenge. It is therefore conceivable that a person who clearly advocates revenge does not necessarily develop feelings and thoughts of revenge after being hurt because of the occurrence of other, protective circumstances. Conversely, a person who generally rejects revenge may nonetheless develop feelings and fantasies of revenge after a traumatic event because he or she suffers from intense feelings of hatred and anger attributed to the event and the perpetrator (Stuckless & Goranson, 1992) or is exposed to negative external circumstances such as continued injustice and lack of perpetrator punishment (Orth, 2004). Findings reported in the third article showing that, in contrast to current revenge, a generally positive attitude toward revenge does not significantly contribute to the prediction of PTSD symptoms (see *Article III*) can be interpreted in similar terms. Attitudes toward revenge may contribute to the development of revenge but are by no means a sufficient prerequisite for the occurrence of revenge and therefore do not have the same reinforcing effect as revenge does on PTSD symptoms. However, this interpretation remains speculative because the actual contribution of general attitudes toward revenge to the variance in current revenge phenomena was not tested.

The model further suggests that specific attributional processes precede the occurrence of revenge after trauma. This is supported by earlier studies indicating that intrapersonal re-

venge can be triggered by negative appraisal processes (Davenport, 1991). Unfortunately, the current data do not provide any information on appraisal processes assumed to influence the development of revenge, such as the appraisal of responsibility and the negative emotional and health consequences resulting from the traumatic event. Nonetheless, it seems plausible that, for instance, the attribution of responsibility is a necessary condition for experiencing feelings or thoughts of revenge against another person or group (Aquino et al., 2001; Eaton et al., 2006; McCullough et al., 2001). Likewise, the negative appraisal of the event and its consequences (Cota-McKinley et al., 2001; Stuckless & Goranson, 1992) seems to be a crucial antecedent of the development of revenge. However, the strength of influence of appraisal processes on the development of revenge and their interaction with other variables has yet to be investigated in victims of trauma. To generate more knowledge on this issue, future studies need to address the effects of cognitive evaluations on revenge. Especially with respect to psychotherapy of trauma victims, it is important to identify dysfunctional cognitive appraisal processes that contribute to the development of revenge and, accordingly, to the maintenance of PTSD (Ehlers & Clark, 2000) and to restructure or replace them in therapy.

Emotional variables

The proposed model also suggests that specifically anger and hatred are emotions that underlie revenge. This assumption is supported by preliminary analyses of the data as well: In the current sample, intrapersonal revenge was significantly associated with anger and hatred. However, due to the cross-sectional character of the data, it is unclear whether anger and hatred are in fact antecedents of revenge. Findings from previous studies provide evidence for the assumed causality by reporting anger and hatred as predictors for the development of revenge motivations and feelings of revenge (Atkinson & Polivy, 1976; Maltby et al., 2008). Whether bitterness underlies revenge as suggested in the model remains unknown, although the conceptualization of the Posttraumatic Embitterment Disorder (PTED) contains references to thoughts

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and fantasies of revenge (Linden et al., 2004). Preliminary findings from the current study do show revenge as significantly correlated with bitterness, yet, it is unclear whether bitterness contributes to revenge or whether revenge may be regarded as an emotion that occurs in the context of disorders characterized by bitterness, such as the proposed PTED.

Motivation-related variables

Finally, in the presented model, self-esteem and self-efficacy as motivation-related variables were hypothesized to moderate the association between anger and hatred and revenge and the association between attitudes toward revenge and current revenge phenomena. Note that self-esteem and self-efficacy are not motivational factors per se but their levels may indicate the occurrence of revenge-related motives such as the need for restoration of self-esteem and of the shattered self-concept (Bayer et al., 2007; Bradfield & Aquino, 1999; Cota-McKinley et al., 2001). Thus, it is feasible that self-esteem and self-efficacy are related to revenge after trauma, as findings from earlier studies indicate. It has been supposed, for instance, that revenge is an implicit expression of the individual's level of self-esteem (Heider, 1958), and there is empirical evidence for a negative relation between self-esteem and revenge phenomena (Eaton et al., 2006; Fincham, 2000; Maes, 1994). Moreover, a positive relation has been reported between forgiveness and self-esteem (Freedman & Enright, 1996). These findings imply a protective effect of self-esteem on the level of revenge in response to a transgression. People with high self-esteem and high self-efficacy are likely less prone to experience feelings and thoughts of revenge even though emotional and cognitive preconditions for revenge are given.

At the same time, the individual degree of self-esteem was not assessed in the current study, and preliminary analyses did not reveal a significant relation between self-efficacy and current revenge phenomena in the investigated sample. The lack of a significant association between self-efficacy and revenge may possibly be explained in terms of third variables. Findings from previous studies indicate that high levels of self-referential variables may not neces-

sarily be protective in general. For instance, self-esteem was positively related to forgiveness only in males, whereas females who had reported lower levels of self-esteem were more prone to forgive (Neto & Mullet, 2004). Likewise, the relation between self-efficacy and revenge found in the current study may also be moderated by person-related variables, such as gender. According to the findings reported above (Neto & Mullet, 2004), lower levels of self-efficacy and self-esteem may lead to less revenge in females, whereas revenge may be an expression of high self-efficacy and self-esteem in males. These assumptions, however, are speculative. The current study did not test for moderating effects of gender or other person-related variables on the relation between self-efficacy and revenge.

The proposed revenge model also indicates a moderator effect of self-referential variables on the relation between revenge and PTSD. Thus, people with higher self-esteem and higher self-efficacy may suffer from fewer PTSD symptoms than those with lower self-esteem and self-efficacy, even if they experience feelings and fantasies of revenge. Again, this assumption was not tested in the current work.

There is clearly a need for further research on the impact of self-referential variables on the development of revenge and their possible moderator effect on the relation between revenge and PTSD. Areas worth exploring are: First, the question whether self-esteem and self-efficacy mitigate the frequency of the occurrence and the intensity of revenge phenomena after trauma. A second open question is whether high levels of self-esteem and self-efficacy reduce the extent to which revenge contributes to the maintenance of PTSD. Third, influential variables that moderate the effects of self-referential variables in trauma victims, such as gender, could be assessed in future research. Fourth, the impact of self-referential variables on forgiveness after traumatic experiences as suggested by findings from previous studies on non-trauma samples (Brown, 2003; Eaton et al., 2006; Hebl & Enright, 1993; Neto & Mullet, 2004) could be the object of further investigation. A better understanding of effects of self-esteem and self-efficacy on the occurrence of revenge and forgiveness in trauma victims promises to improve the effec-

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tiveness of trauma therapy. If higher levels of self-esteem and self-efficacy protect against intense feelings and fantasies of revenge and hence contribute to ameliorating PTSD symptoms, therapeutic interventions may specifically focus on the restoration or reinforcement of a positive self-concept in survivors of trauma.

Apart from these self-referential variables, no further motivational aspects were included in the revenge model or assessed in the current study. It is known from the literature that the need for restoring justice and security, compensation of losses, and validation of moral standards (Cota-McKinley et al., 2001; McCullough et al., 2001), for instance, are important motives that foster the development of revenge. It is therefore advisable to extend the proposed model by specific revenge-related motives and to empirically assess their impact on the development of feelings and thoughts of revenge in trauma samples. Knowledge on typical motives that drive revenge is essential for psychotherapeutic and societal interventions. Identifying these motives and targeting their fulfillment in more functional ways may contribute to the reduction of revenge in trauma victims. For example, satisfying the needs for restoration of justice and security by adequately punishing those responsible and by providing appropriate compensation for the victim's harm and losses (Orth, 2004) would obviate the victim's need to engage in vengeful fantasies and emotions. Victims would thus be enabled to discard their vengeful ideas and to reach closure on the trauma (Ehlers, 1999).

In sum, the proposed revenge model provides valuable insight into processes leading to the development of revenge. Parts of the model were empirically supported by the current data on former political prisoners. Due to the cross-sectional character of the available data, no conclusions on the directions of the reported relations between emotions, cognitions, and motivations and revenge can be drawn from the current study. Longitudinal studies that track the impact of emotional, cognitive, and motivational processes after trauma on the development of revenge should investigate whether the suggested model components are in fact antecedents of

or moderators for the occurrence of revenge phenomena after trauma. Verification and modification of the entire model is both welcome and needed.

The relation between revenge phenomena and PTSD

The model presented in the first article is indifferent to the causality of the relation between revenge and PTSD. Both directions, revenge triggered by PTSD symptoms and PTSD being affected by revenge phenomena, are plotted in the model. Findings from the second article presented show that feelings and cognitions of revenge are a significant predictor for PTSD symptoms. These findings indicate that revenge can be regarded as a risk factor for PTSD rather than as a result of PTSD symptomatology. Therefore, the connection between revenge and PTSD in the model would be better plotted as a unidirectional link that illustrates the assumed causality of revenge as contributing to PTSD symptoms.

The current investigation revealed that feelings and cognitions of revenge are a significant predictor for PTSD symptom. At the same time, the cross-sectional nature of the data on revenge limits the interpretability of the findings. Although PTSD symptoms have been assessed longitudinally and both clinician-rated and self-reported PTSD data are available for both points of measurement, in 1995 and in 2008, revenge was assessed only in the second study in 2008. Thus, there is no conclusive evidence to prove that feelings and cognitions of revenge actually contribute to PTSD symptoms. It is also unclear whether these feelings and cognitions contribute to the development of PTSD or whether they contribute to the maintenance of symptoms. Findings from previous investigations and reports from clinical practice support the current interpretation of a maintaining effect of feelings and cognitions of revenge on PTSD. Harboring revenge feelings and cognitions has been said to hamper recovery from PTSD in the long run after trauma (Horowitz, 2007; Lamb, 2005). It has further been shown that the correlation between feelings and fantasies of revenge and PTSD increases over time, indicating that revenge influences the course and maintenance of PTSD symptoms rather than

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fostering its development (Orth et al., 2003; Orth et al., 2006; Roussos et al., 2005). According to these findings, it is legitimate to interpret the current result of revenge as a significant predictor for PTSD symptoms in terms of revenge as a risk factor for PTSD maintenance. This interpretation is further supported by the current data that show that feelings and cognitions of revenge as assessed in 2008 are significantly associated with PTSD symptoms in 2008 but not with former PTSD symptoms as assessed in 1995.

There are several plausible theoretical explanations that further substantiate the assumed PTSD-maintaining effect of feelings and cognitions of revenge. According to the cognitive PTSD model of Ehlers and Clark (2000), revenge-related cognitions, such as fantasizing about how justice can be restored and revenge can be achieved, represent a dysfunctional means of trauma processing that impedes the formation of a more coherent trauma memory and thus maintains the PTSD symptomatology. It has also been stated that the activation of certain memory components associated with anger and aggression (Foa & Kozak, 1986; Riggs et al., 1992) may maintain hyperarousal and thus perpetuate PTSD symptoms (Ehlers et al., 1998). In addition, the development of other negative and stressful emotions such as shame or remorse associated with the experience of vengeful feelings and thoughts may negatively influence mental health in general (Horowitz, 2007; Worthington et al., 2007). Another suggestion has been that the ruminative character of feelings of revenge contributes to reducing mental health (Ys-seldyk et al., 2007). Finally, being occupied with feelings and thoughts of revenge may lead to exclusion from the social environment (Elster, 1990). Lack of social support on its part has been proved to be an important risk factor for PTSD (Brewin, 2005; Schützwohl & Maercker, 2000).

In the current study, feelings and cognitions of revenge were only moderately related to revenge intentions. This is in line with previous studies that also reported a moderate relationship between emotional and cognitive and behavior-related aspects of revenge (Greer et al., 2005; Stuckless & Goranson, 1992). As reported in the second article, revenge intentions—in

contrast to feelings and cognitions of revenge—were not predictive for PTSD in the current sample. This finding may be attributable to the conceptual differences between these two revenge aspects, as indicated by the only moderate relation between them. Another explanation for the lack of predictive power of revenge intentions on PTSD symptoms is that revenge intentions may provide a certain degree of relief from negative feelings (Aquino et al., 2001; Stuckless & Goranson, 1992) and enhance perceived power and control (Bradfield & Aquino, 1999; Orth et al., 2003) in the victim. If so, revenge intentions would not necessarily have a sustaining effect on symptoms. However, this explanation is purely speculative. Why revenge intentions do not become dysfunctional when they persist over longer periods (Ehlers, 1999), as it is the case for feelings and cognitions of revenge, remains an open question. Future studies may address psychological differences between feelings and cognitions of revenge and revenge intentions and why revenge intentions have no maintaining effect on PTSD.

To investigate the causality of the relation between revenge phenomena and PTSD in trauma samples, longitudinal studies are needed. Future research applying longitudinal study designs may assess whether revenge or PTSD symptoms occur first in the aftermath of trauma. Another issue to investigate is whether people who experience intense revenge are more inclined to maintain PTSD symptoms than people who are not occupied with revenge, and vice versa: whether people who suffer from persistent and severe PTSD symptoms are more inclined to revenge than people with a less severe symptomatology. Furthermore, the extent of the correlation between revenge and PTSD symptomatology over time should be tracked (Orth et al., 2003; Orth et al., 2006). The impact of external variables that moderate or mediate the relation between revenge and PTSD should also be addressed in future research. It is imaginable, for instance, that social support, which has been shown as protective for PTSD (Basoglu et al., 1994; Maercker & Müller, 2004), mitigates the effects of revenge on PTSD. With respect to therapeutic interventions in particular, it would be valuable to identify possible protective variables for use in the therapy of traumatized people who struggle with revenge. Finally, the main-

taining impact of revenge on PTSD in the long run after trauma implies specific therapeutic consequences. Early intervention shortly after trauma may prevent the development of revenge and, thus, prevent the chronification of PTSD symptoms. Moreover, therapeutic interventions for persistent PTSD need to target intrapersonal aspects of revenge (see *Therapeutic implications* in this chapter).

The relation between forgiveness and PTSD

The proposed revenge model also refers to forgiveness, although it provides no clear hypothesis about the role of forgiveness in relation to revenge and PTSD. In the model, forgiveness is plotted in interaction with revenge and as indirectly related to PTSD, and is influenced by the same emotions and cognitions as revenge. The specific relation between revenge and forgiveness is addressed in the third article of this work. Findings presented in this article show that although forgiveness is related to revenge to a moderate degree, it is nonetheless distinct from revenge and cannot simply be seen as its opposite. Three factors were identified as underlying the different assessed aspects of revenge and forgiveness, namely Revenge, Grudge holding, and Forgiveness (see *Article III* and *Summary of the three presented articles*). Pathways between revenge and forgiveness in the proposed revenge model should be modified accordingly: Forgiveness should be presented as clearly distinct from revenge. Similarly, the model should be supplemented by other mental states related to revenge and forgiveness such as Grudge holding, which represents a mental state that is neither revenge nor forgiveness. Finally, taking into account the finding that revenge and forgiveness represent two distinct phenomena, it is conceivable that emotions, cognitions, and motivations associated with forgiveness are not identical with those assumed to underlie revenge. Therefore, additional emotional, cognitive, and motivational components that are specific to forgiveness should be added to the proposed model and tested in future studies.

Findings presented in the third article further indicate that, unlike revenge, forgiveness has no predictive power for PTSD symptoms in highly traumatized people. Health-promoting effects of forgiveness have been mainly reported in non-trauma samples, such as individuals who had been harmed in close relationships (McCullough et al., 1998; McCullough et al., 2001; Worthington et al., 2007). Given that few studies have investigated forgiveness in the context of trauma and its relation to PTSD, it is unclear whether the current finding represents a specific characteristic of the investigated group of former political prisoners or whether forgiveness fails to be health-improving in highly traumatized people in general (Karremans et al., 2003). However, one may also question the validity of the findings on health-improving effects of forgiveness reported in earlier studies, which failed to distinguish between the specific effect of the pro-social component of forgiveness and effects that stem from reductions in negative emotions and cognitions. Findings from previous research that refer to reduced psychophysiological arousal (Witvliet et al., 2001), anger (Orth et al., 2008), and stress (Lawler et al., 2005) as main mechanisms underlying the health-improving effect of forgiveness lead to the conclusion that a positive impact of forgiveness on mental health may be mainly attributable to reductions in negative affectivity. Thus, the specific pro-social component of forgiveness is not necessarily health-improving. This may explain the lack of predictive power of forgiveness on PTSD symptoms beyond the predictive power of revenge in the current study.

Future investigations may further assess the specific influence of each reduction of revenge and promotion of forgiveness (Wade & Worthington, 2003; Worthington & Wade, 1999) on mental health outcomes, especially on PTSD, in trauma samples. It could be hypothesized that, specifically in victims of trauma, forgiveness has no explanatory power for the variance in PTSD symptoms beyond the explanatory power of reductions in revenge. Another potential task is to explore the impact of trauma severity and of perpetrator characteristics on the relation between forgiveness and PTSD. Forgiveness may indeed have a health-improving effect after slight harms by close ones (McCullough et al., 2001; Worthington et al., 2007), but not after

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severe traumatization and in cases where responsibility is diffused (Karremans et al., 2003). To test this assumption, differences between several groups of transgression severity, ranging from everyday situations to severe traumatization, and differences between several types of trauma would need to be investigated. In addition, differences in the effects of forgiveness on mental health between trauma groups defined by social proximity to the perpetrator (Girard & Mullet, 1997), reaching from forgiveness of a close one, forgiveness of a foreign perpetrator, to forgiveness of multiple unknown persons responsible, as in the case of political imprisonment, may be assessed. Future studies have to heed the fact that forgiving a close one for a mild harm may represent a fundamentally different mental process than forgiving a severe traumatic transgression that has long-term negative consequences for the victims (Worthington et al., 2007). One essential difference lays, for example, in the motives that drive forgiveness. Whereas in close relationships a main motivational factor for forgiving another person may be the wish for reconciliation and for continuing the relationship (Freedman & Enright, 1996; Fincham, 2000), this clearly does not apply to forgiveness after trauma. To date, the knowledge on forgiveness after trauma is very limited. Future research may address the specific characteristics of forgiving a severe traumatic event and its consequences for mental health, especially for PTSD symptomatology.

Finally, it needs to be considered that although forgiveness was not related to diminished PTSD symptoms in the current sample, it nonetheless may have a positive effect on other mental health outcomes that were not investigated in the present study. According to the current finding that revenge and forgiveness are distinct mental phenomena that appear to involve different psychological processes (McCullough et al., 2000), it is conceivable that forgiveness may influence other mental health variables than revenge. Higher forgiveness, for instance, has been related with lower depressive affect (Ysseldyk et al., 2007). Likewise, failing to forgive has been associated with higher symptoms of depression and anxiety (Karreman et al., 2003). Thus, whereas revenge affects PTSD symptomatology, forgiveness may instead be effective for de-

pression and other anxiety disorders. Forgiveness may also be associated with positive health outcomes such as positive emotions and subjective well-being. Previous studies have shown enhanced subjective well-being (Bono et al., 2008; Karremans et al., 2003; McCullough et al., 2001) and life satisfaction (McCullough et al., 2001; Muñoz Sastre et al., 2003; Ysseldyk et al., 2007) in people who had forgiven someone who had caused an unjust and harmful experience, although these positive relations were mostly weak and not always significant. Again, these studies focused solely on forgiveness in close relationships and did not investigate emotional states and subjective well-being following forgiveness in trauma samples. However, preliminary statistical analyses of the current data show that satisfaction with life is significantly related to the tendency to forgive in the investigated sample and provide first evidence for possible effects of forgiveness on positive health outcomes. Further evidence is needed from future studies. Regrettably, no further data on subjective well-being and positive emotions were gathered in the current study.

In summary, more research is needed to investigate the impact of forgiveness on PTSD in other samples of trauma survivors, especially with regards to the incremental variance explained by forgiveness beyond the explanatory power of reductions in revenge. In addition, such investigations need to study the effects of forgiveness on other mental disorders and on positive health-outcomes such as subjective well-being and life satisfaction.

Contribution of the current study

Before the limitations of the present investigation are acknowledged, the content-related and methodological advantages of the current study and its specific contribution to the existing body of trauma research are highlighted. The study presented in this thesis is, to my knowledge, the first to investigate intrapersonal revenge phenomena as a predictor for PTSD in a sample of former political prisoners, a trauma group that can be assumed to be highly vulnerable to PTSD symptoms and to experiencing feelings and fantasies of revenge. It is also one of the few inves-

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tigations to have explicitly tested factors underlying intrapersonal aspects of revenge and forgiveness in a sample of survivors of trauma. Assessing the incremental variance in PTSD symptoms explained by forgiveness beyond the impact of revenge provides new knowledge on the effect of forgiveness on mental health in the aftermath of severe trauma.

The present investigation has several conceptual and methodological advantages compared to previous studies. First, several aspects of revenge after trauma were investigated, namely revenge feelings, cognitions, intentions, and behavior, as well as general attitudes toward revenge. Previous studies, in contrast, had focused only on feelings and cognitions of revenge. Second, in contrast to most previous studies, the predictive power of revenge phenomena for PTSD symptoms was controlled for standard predictive variables. The availability of longitudinal PTSD data from 1995 and 2008 made it possible to control for the variance in current PTSD explained by former PTSD symptoms. This in turn enabled the actual amount of variance explained by revenge to be determined. Third, the factor structure of revenge and forgiveness was assessed while separating current revenge and forgiveness from general attitudes. The lack of predictive power of attitudes toward revenge and forgiveness for PTSD in the current study supports the assumption that current phenomena and general attitudes should not be conceptually conflated with each other. To my knowledge, no other study explicitly distinguished between current phenomena and general attitudes when investigating revenge and forgiveness. Finally, the specific impact of forgiveness after trauma on PTSD symptoms was assessed. Findings lead to the conclusion that forgiveness after trauma, specifically the pro-social component of forgiveness, does not necessarily ameliorate PTSD symptomatology.

While making an important contribution to existing trauma research, the present study suffers from several limitations that may reduce the validity and generalizability of its results. These limitations are addressed and discussed against the background of future research perspectives in the following.

Limitations of the current study

Limitations of the study are linked to the applied conceptualization of revenge and forgiveness, possible internal and external variables that may have influenced the occurrence of revenge or forgiveness and their relation to PTSD and that have not been controlled for in the present investigation, and the methodology.

Conceptualization of revenge and forgiveness

Most of the previous investigations on revenge neglected the different aspects that can be subsumed under the concept of intrapersonal revenge. In response, the current investigation measured several aspects of revenge, which allowed the specific association between each aspect of revenge and PTSD to be tested. However, although the conceptualization of forgiveness also encompasses affective, cognitive, and motivational aspects, these were not addressed. The information provided on forgiveness—in contrast to revenge—and its relation to PTSD is thus restricted. From the current data, it cannot be deduced whether the investigated intrapersonal revenge and forgiveness phenomena in fact represent specific attempts to cope with trauma, meaning that the conceptualization and operationalization of revenge and forgiveness as coping strategies requires further clarification. To learn about the coping function of revenge and forgiveness it is advisable, for instance, to compare the effects of revenge and forgiveness on mental health with the effects of other coping mechanisms that may be applied in the aftermath of trauma, such as accepting the injustice, cognitively reframing the event and its consequences, or suppressing or denying one's emotions (Berry et al., 2005; Worthington, 2001). The considered examples show that the theoretical conceptualizations of revenge and forgiveness were not specifically implemented in the present empirical investigation of these concepts.

No explicit distinction has been made between feelings of revenge that result from the specific offense and target one or more specific offenders and the general inclination to vengeful responses after being hurt (McCullough et al., 2001; Stuckless & Goranson, 1992), as pro-

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posed in the literature. Nor was a distinction made between forgiveness related to the specific offense and dispositional forgiveness (Fehr et al., 2010; McCullough et al., 1998; Berry et al., 2001; Mullet et al., 1998). However, as noted in the third article, due to the length of time that has passed since the current sample's release from prison, offense-specific revenge and forgiveness and general tendencies to revenge and forgiveness may no longer be clearly distinguishable from each other. Offense-specific revenge, for example, that has been developed after political imprisonment may have developed into a general tendency to experience vengeful feelings and thoughts, on average more than four decades after release from prison. Moreover, previous studies have shown that state forgiveness and dispositional forgiveness are highly correlated with each other (Brown, 2003; Brown & Phillips, 2005). The same may hold true for revenge. It has therefore been assumed that the data on revenge and forgiveness assessed in the current investigation reflect the individual inclination to harbor feelings and thoughts of revenge or to forgive, as established in the aftermath of traumatization by political imprisonment. To test this assumption, future studies may explicitly assess both the general tendencies and the current offense-specific aspects of revenge and forgiveness. Moreover, longitudinal study designs would facilitate assessing the specific impact of offense-specific revenge and forgiveness in the short run after trauma compared to the influence of general inclinations to experience revenge or to promote forgiveness in the long run after trauma. Ideally, a comparison would be made between pre-traumatic and post-traumatic general tendencies to revenge and forgiveness.

It should also be noted that future investigations also have to distinguish revenge and forgiveness from related concepts such as the wish for punishment and reciprocity (Bradfield & Aquino, 1999; Ho et al., 2002) or the motivation to reconcile (Fincham, 2000). Only precise and theoretically well-founded conceptualizations of revenge and forgiveness ensure valid results and the comparability of findings.

Internal and external variables of influence

Previous studies have shown a variety of internal person-related, and external situational variables that may influence the development and extent of revenge and forgiveness and the association between the two phenomena and PTSD symptoms. In the current work the main focus was on intrapersonal aspects of revenge and forgiveness, whereas demographic and external variables that may have influenced the occurrence of revenge and forgiveness or that may have moderated or mediated the relation between revenge and forgiveness and PTSD were not assessed. Possible effects of such variables of influence cannot be excluded when interpreting the findings discussed here.

The influence of socio-demographic variables. In previous studies, age and gender were associated with both revenge and forgiveness. For older compared to younger people, a stronger tendency to forgive (Girard & Mullet, 1997; Mullet et al., 1998) and a lower tendency to be vengeful (Cota-McKinley et al., 2001) have been reported. These findings have been explained in terms of a higher developmental stage of moral reasoning in older people, including the preference for moral and appropriate responses to perceived injustice and harm (Enright et al., 1989). Furthermore, men have been reported to be less prone to forgive and more prone to seek revenge (Brown, 2004; Mullet et al., 1998) than women. Findings from other studies have shown more positive attitudes toward revenge in men than in women (Cota-McKinley et al., 2001; Stuckless & Goranson, 1992). As mentioned earlier in this section, gender has also been reported to moderate the relationship between self-esteem and the propensity to forgive (Neto & Mullet, 2004). However, age and gender effects on revenge and forgiveness as reported in the literature are heterogeneous: Other studies have shown no or even converse effects of age and gender on revenge and forgiveness (Orth, 2004; Ysseldyk et al., 2007). Likewise, varying results have been reported on the effect of educational level. Whereas some authors have found, for instance, a higher tendency to forgive in people with higher levels of education (Mullet et

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al., 1998), others have reported higher levels of openness to reconciliation, which is related to forgiveness, in people with lower levels of education (Pham et al., 2004).

In the current study, no significant associations between age, gender, or educational level and revenge and forgiveness were found. Moderator effects of these variables on the relation between revenge or forgiveness and PTSD were not tested. Given the relatively homogeneous sample, namely a significantly higher number of male participants and the majority being older than 65 years, the lack of significant correlations has to be interpreted with caution. Thus, no final conclusions on effects of age, gender, and educational level on revenge and forgiveness phenomena are possible from the current data. Future investigations on this topic need to consider that socio-demographic variables may influence the extent of revenge and forgiveness.

The influence of religiosity. Another variable that has often been mentioned in the context of revenge and forgiveness is the level of religiosity and belief in God. Previous studies have shown that people who believed in God and who attended church were less prone to seek revenge and had a less positive attitude toward revenge than nonbelievers and people who did not actively practice their belief (Cota-McKinley et al., 2001; Mullet et al., 1998). Those who attended church also experienced fewer obstacles to forgiveness (Mullet et al., 1998). Moreover, the relationship between forgiveness and satisfaction with life has been shown to change as a function of the level of religious involvement (Muñoz Sastre et al., 2003), indicating that forgiveness results in higher life satisfaction only in people with high religious involvement. According to these findings, it is plausible that religiosity is positively related to forgiveness and negatively related to revenge. Yet it has been reported that religious belief can also have negative health consequences. In a sample of war veterans, negative religious coping (e.g., religious discontent or questioning the power of God) was positively related to PTSD symptom severity (Witvliet et al., 2004). Questioning the power of God and struggling with one's damaged ability to believe may represent an additional stressor that contributes to enhanced PTSD symptomatology. The impact of religious orientation on revenge may further depend on the

degree of internalization of the orientation. It has been reported that a highly extrinsic religious orientation was positively related to revenge (Greer et al., 2005), indicating that a religious conviction that is not internalized but mainly outward directed does not contribute to reductions in revenge. In the current study, no significant relations between religiousness and revenge or forgiveness were detected. However, this result may also be explained in terms of the specific characteristics of the assessed sample. The percentage of religious people in former East Germany is in general lower than in other parts of Germany, which can be attributed to the impact of the former communist regime that propagated a non-religious conception of the world and even initiated repressions against churches and believers. Future studies in different societal and religious contexts may further investigate the impact of religious conviction and practice on revenge and forgiveness in survivors of severe trauma.

The influence of external variables. Beyond these person-related variables, characteristics of the traumatic event have to be considered an influential factor on the development of revenge and the promotion of forgiveness. In previous investigations, trauma severity has been related to the amount and intensity of feelings of anger (Schützwohl & Maercker, 2000). Given the assumption that anger is one of the main emotions that underlie feelings of revenge, it is conceivable that the severity of the traumatic event also influences the occurrence of intrapersonal revenge. This is supported by several studies. For samples of college students, it was reported that the more offensive the interpersonal transgression the higher the anger affect and the wish for revenge (Berry et al., 2005). In several samples of survivors of war, trauma severity and cumulated trauma exposure were associated with a more negative attitude toward reconciliation and stronger feelings of revenge (Bayer et al., 2007; Lopes Cardozo et al., 2003; Pham et al., 2004). Another variable related to the traumatic event that has been associated with revenge and forgiveness is the time since trauma. There is empirical evidence that the time that has passed since victimization is positively related to reductions in revenge motivations and increases in forgiveness (McCullough et al., 2003). Again, previous findings on the impact of

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time since trauma are not consistent. Other studies have not found any significant influence of time on the intensity of feelings of revenge (Orth, 2004). However, it has been reported that time since trauma may moderate the relation between current feelings of revenge and posttraumatic stress symptoms in that the correlation between the two increases over time (Orth et al., 2003) indicating a PTSD-maintaining effect of revenge.

In the current study, neither subjective ratings of trauma severity nor time since release from prison were predictive for PTSD symptoms (see *Article II*) and for revenge and forgiveness. The time that had passed since release from prison was generally long. It could be assumed that after a certain length of time since trauma, no significant changes in the intensity of intrapersonal revenge and forgiveness take place. It is conceivable that, as known for PTSD, trauma severity may be similarly important for the development but not for the persistence of revenge in the long run after trauma (Orth et al., 2003; Riggs et al., 1992). However, the current data do not provide information about the initial relationship between trauma severity and revenge and forgiveness and about the course of this relation over time.

Apologies and perpetrator punishment have also been shown to influence the occurrence of revenge and forgiveness. Apologies from the transgressors represent an important aspect of restoration of justice and respect for the traumatized victim (McCullough et al., 1998). They can therefore be regarded as substantially reinforcing the forgiveness process (Brown & Phillips, 2005; McCullough & Hoyt, 2002) and the reduction of revenge (Eaton et al., 2006). Likewise, legal punishment of those responsible may also contribute to restoring the victim's sense of justice by showing that society does not tolerate offenses (Orth, 2004). Punishment and apologies therefore fulfill some of the essential motives that have been said to underlie revenge and thus support victims in attaining relief from negative feelings and fantasies of revenge. Punishment has been shown to be an important precondition for the promotion of forgiveness as well (Girard & Mullet, 1997). However, previous investigations also suggest that perpetrator punishment reduces revenge only in the short run after trauma, and does not necessarily satisfy vic-

tims' feelings of revenge in the long run (Orth, 2004). The initial satisfaction experienced by the punishment of those responsible may be reduced in the long run by the fact that the severity of punishment is confined to the usual legal range and hence is subjectively perceived as inappropriate in its severity and duration when compared to the transgression severity and long-term health consequences the victims have experienced (Orth, 2004). Perpetrator punishment may also be unsatisfying when additional forms of restoring justice, such as compensation for the traumatic event, fail to occur. In that case, additional approaches to restoring justice are necessary. Adequate compensation, for instance, has been shown to be a stronger predictor for feelings of revenge than perpetrator punishment (Orth, 2004). Given that neither perpetrator punishment nor apologies from those responsible took place in the current sample (Mutter, 2011), no uncontrolled effects of these variables are likely to have influenced the findings of the present investigation. However, future studies are encouraged to investigate the effects of punishment and apologies on the extent of revenge and the promotion of forgiveness in other trauma samples.

In sum, the lack of significant associations between person- and trauma-related variables and revenge, forgiveness, and PTSD in the current study may be explained in terms of sample characteristics. Whereas previous studies that reported effects of these variables assessed non-trauma samples or samples of type I trauma, the current sample consisted of victims of prolonged, multiple, and man-made trauma. Thus, findings from earlier studies cannot necessarily be transferred to samples of severe type II traumatization. It has been reported, for instance, that apologies following severe harm are less likely to reduce retaliation than are apologies following less severe transgressions (Zechmeister et al., 2004). Moreover, the current sample was relatively homogenous with regards to socio-demographic and posttraumatic situational variables such as perpetrator punishment, apologies, and compensation. More research on variables that influence the development and maintenance of revenge and forgiveness, their courses over

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time, and their associations with mental health outcomes in samples of trauma survivors is needed, especially on variables that can be therapeutically targeted.

Methods applied in the current study

Several limitations of the current work concern the methods applied to investigate revenge and forgiveness and their association with PTSD. These limitations pertain to the cross-sectional study design, the scales applied in the study, and the specific characteristics of the investigated sample of former East German political prisoners. Possible limitations that may result from methodological shortcomings are addressed in the following.

Study design. As stated earlier, the main shortcoming of the current study is the lack of data on revenge and forgiveness for the first point of measurement, in 1995. Due to the cross-sectional character of the study, no final conclusions on the direction of the identified relations are possible and interpretations of causalities remain speculative. Nor can the time stability of revenge and forgiveness phenomena be determined. For feelings of revenge, for instance, it has been reported that they decline over time (Orth, 2004; Orth et al., 2003). However, it is unknown whether intrapersonal revenge phenomena continually decline or whether their intensity fluctuates over time depending on other variables such as present life circumstances or societal processes (McCullough et al., 2003; Wohl & McGrath, 2007). It is also unknown whether a forgiving state may change over time and what variables influence promotion of forgiveness. In the current investigation, no data on initial states of intrapersonal revenge and forgiveness in the first period of time after trauma are available. The initial degree of revenge, for instance, has been stated to be a key variable for its course over time (Cullough et al., 2001). Finally, nothing can be said about pre-traumatic tendencies and attitudes related to vengeful and forgiving responses. For example, it can only be speculated whether the measured general attitudes toward forgiveness and revenge reflect attitudes that existed before the trauma had occurred or whether they reflect attitudes that developed in the aftermath of trauma. But because no significant asso-

ciations were found between attitudes toward revenge and forgiveness and PTSD symptoms, this limitation does not appear to affect the quality of the current data and is irrelevant for the findings reported here. Although no information on initial states and courses can be derived from the presented study, results nonetheless show that revenge was existent in the investigated sample more than four decades after trauma, indicating a relative stability of revenge over time in highly traumatized people. Longitudinal studies are therefore needed to investigate courses of revenge and forgiveness over time, factors that influence these courses, and the relation between revenge and forgiveness and mental health outcomes in the long run after trauma.

Applied measures. Another methodological aspect subject to critique concerns the measures applied in the current investigation. First, most measures were self-report scales, which may limit the quality of the information. Results of the second article show, for instance, that the self- and clinician-rated PTSD symptoms were only moderately correlated with each other. In addition, self-reported PTSD data fit better to the regression model applied to predict PTSD symptoms than did clinician-rated PTSD symptoms. It is possible that the self-report measures used in the current investigation were influenced by several psychological variables and by subjective response behavior. On the one hand, self-reports may have facilitated the admission of symptoms. On the other hand, they may have led both to a denial of socially undesirable experiences such as being occupied with feelings and fantasies of revenge and to intensified reports of socially desirable phenomena such as forgiveness (Enright & Zell, 1989). Thus, it is not clear whether the current study represents the true extent of PTSD symptoms, revenge, and forgiveness in the victims. Nor is it clear whether the reported relations represent the true associations between the assessed variables or whether results are influenced by individual response behavior. Future investigations would therefore be advised to supplement self-reports with the application of more objective measures such as clinical interviews, anonymous online assessments, or experimental designs. Using medical imaging methods such as CT or MRT would provide insight into physiological processes related to the occurrence of revenge and its

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association with PTSD. To date, no study has investigated revenge processes using these methods. A study on neurobiological correlates of altruistic punishment of unfair players in an experimental game situation did identify activations of reward-associated brain structures, namely the orbitofrontal cortex and the nucleus accumbens, when unfair players were punished (Seymour et al, 2007). These activations were also correlated with subjective feelings of retribution. However, these findings cannot necessarily be transferred to revenge due to the conceptual differences between punishment and revenge, the different contexts in which retributive phenomena have developed, and the different psychological modes that were targeted, namely actions versus intrapersonal processes. In addition, the activation of reward-related components was tested only directly following punishment, preventing any conclusion from being drawn about long-term effects. Thus, neuroimaging studies assessing brain activations that are specifically for experiences of revenge and the promotion of forgiveness following trauma, also in the long run, are needed.

Although the current investigation, unlike previous studies, assessed several aspects of revenge, the operationalization of the additional revenge aspects may be criticized. The self-developed Revenge Intentions Scale (see *Appendix C*) showed low internal consistency. This can be explained by the fact that in contrast to the first two items tapping intrapersonal revenge intentions, the third item asked for actual revenge behavior. This third item was problematic for several reasons: First, the willingness to act on revenge has to be distinguished from feelings of revenge (Orth, 2004). Second, it did not appear useful to analyze revenge behavior as a separate construct, because the validity of a single item is limited. Third, it was unclear what exactly this item measured. The participants' individual concepts of taking revenge may have also encompassed related concepts such as punishment and may have referred to legal steps, such as suing those responsible, rather than to revenge as defined in the current study. Finally, it is possible that actual revenge behavior existed but was not fully disclosed because of its illegal or socially unacceptable character. For these reasons the revenge behavior item was excluded from further

statistical analyses in the presented study. Future studies may operationalize revenge intentions and behavior in a more sophisticated way than has been done in the current investigation. To ensure that revenge is assessed in terms of a destructive and inappropriate response as defined in the current study, they might assess both what exactly traumatized people would do if they had the opportunity to take revenge on those responsible and what they actually have done to take revenge

Other scales applied to assess revenge and forgiveness in this study may be open to several criticisms as well. The Attitudes toward Forgiveness Scale (Brown, 2003) also showed only weak internal consistency, indicating a relative heterogeneity of the mental phenomena measured with this scale (see the discussion section of the third article). Items reducing the scale's homogeneity therefore had to be excluded from the statistical analyses in the current study. The Vengeance Scale (Stuckless & Goranson, 1992), constructed as a one-dimensional instrument with revenge and forgiveness as its poles, proved to be an inappropriate measure given that revenge and forgiveness were found to be multidimensional. Moreover, the Vengeance Scale conflated general attitudes with current phenomena, which contradicts the assumption that the two are distinct. However, this scale was not used as a complete instrument in the current study. Items of the Vengeance Scale were included in the statistical analyses separately with regards to revenge and forgiveness and to current phenomena and general attitudes. The low internal consistencies of some of the scales applied in this work highlight the importance of internally consistent, reliable, and theoretically well-substantiated scales in future studies. Better instruments need to be developed that take into account theoretical considerations of the conceptualization of revenge and forgiveness and findings presented in the current work. New scales may involve, for example, the different dimensions that have been identified as underlying revenge and forgiveness.

Sample characteristics and generalizability of the results. Due to the recruitment strategy via advertisements in newspapers and journals before the first assessment in 1995, the in-

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investigated sample may not fully represent the group of former East German political prisoners. It is possible that especially persons with higher PTSD symptoms and higher intrapersonal revenge responded who were interested in getting advice and help or in receiving acknowledgment and justice by publicizing their experiences. In that case, the sample would overestimate both PTSD symptoms and feelings and cognitions of revenge. Conversely, it is possible that only more healthy persons who were able to speak about their traumatic experiences reacted to the announcement and were willing to participate in the study. This question, however, cannot be clarified. Future studies using different recruitment strategies may corroborate the representativeness of the current sample for the basic population of former East German political prisoners.

Even if representative of the population, the investigated sample of former political prisoners may be not representative for other trauma samples. Participants had been exposed to severe type II trauma that was man-made, intentional, and state-organized, and of special intensity and length. They were therefore predestined to have severe PTSD symptoms and intense feelings and thoughts of revenge as well as a low inclination to forgive. Additionally, the current sample may differ from other trauma samples by the continued experience of negative trauma consequences and the specific circumstances in the aftermath of trauma. Especially the lack of psychotherapeutic treatment and the low societal acknowledgement, support, and compensation are typical for former East German political prisoners (see *Political imprisonment in the former GDR*). Participants reported that the injustice and suffering they experienced were never acknowledged, that those responsible had never apologized, and that hardly any of the perpetrators had been legally punished (Mutter, 2011). These factors have been reported as risk factors for PTSD maintenance in previous studies (Orth, 2004). At the same time, the cancellation of consequences has been reported as an important precondition for forgiveness (Girard & Mullet, 1997; Mullet et al., 1998). The ongoing negative and stressful circumstances and the lack of justice and compensation may have intensified PTSD symptomatology and intraper-

sonal revenge and may explain the relatively low inclination to forgive in the current sample. It has been suggested, for instance, that forgiveness in the aftermath of political imprisonment differs from other contexts of forgiveness due to the specific characteristics of trauma and the multiple health consequences (David & Choi, 2006). The specific features of the assessed sample may be unique to political prisoners and therefore limit the generalizability of the current findings.

The findings may also be specific to our Western culture. It is unknown whether fantasies of revenge are dysfunctional for trauma victims in other cultures, in which factors such as honor and differing moral conceptions of retribution may influence the effects of intrapersonal revenge on mental health. Further investigations thus need to confirm the transferability of the current results to other trauma samples and to other cultures.

Another possible objection is that due to the length of time between release from prison and the data collection in 2008, the symptomatology in the current sample might have been influenced by other subsequent traumatic experiences. However, further trauma was controlled for in the present study by explicitly asking for other traumatic experiences and a subjective evaluation of their severity. All participants reported the event of political imprisonment as the worst and most severe experience in their lives. Nonetheless, it can not be ruled out that further stressful life events, such as the death of loved ones, the occurrence of severe diseases, retirement, or the reduction of social network, which are typical for older people, may have led to a cumulated PTSD symptomatology or to a delayed development of PTSD symptoms in this sample.

Finally, findings from the current study may be limited by the sample size of less than 100 participants. Greater sample sizes would allow the application of more sophisticated statistical analyses such as structured equation modeling. Such analyses are useful for testing directions of relations and emotions, cognitions, and motives assumed to underlie intrapersonal revenge and forgiveness as hypothesized in the proposed revenge model.

Despite these limitations, the current study provides valuable insight into the little investigated topic of revenge after trauma, its relation to forgiveness, and effects of revenge on mental health, namely on PTSD. As mentioned earlier, the current findings are particularly relevant for psychotherapeutic treatment of victims of severe traumatization. The following section therefore addresses therapeutic implications of the current findings and discusses the roles of revenge and forgiveness in the treatment of PTSD in trauma therapy.

Therapeutic implications

Professional psychotherapeutic support is crucial for recovering from trauma (Lamb, 2005). Surprisingly, the topic of revenge is absent in the therapy literature, especially in the literature on cognitive behavioral therapy (DiGuiseppe & Froh, 2002). According to the findings from the current study, however, revenge appears to be an important risk factor for mental health that may hamper recovery from trauma (Horowitz, 2007). Dysfunctional feelings and cognitions of revenge therefore have to be therapeutically targeted. Possible therapeutic interventions deduced from the current findings are presented in the following.

In the psychotherapeutic setting, patients have to be enabled to learn about and accept the full complexity of their emotions and thoughts related to the traumatic experience, including feelings and fantasies of revenge and possible associated feelings and thoughts such as remorse, shame, or self-blame (Horowitz, 2007). They further have to fully experience and express their feelings of revenge, work them through, and finally let them go. In the process, it seems crucial to reduce feelings of anger and hatred that are assumed to be the main emotions underlying revenge. According to the proposed revenge model and to previous findings that suggest that anger and hatred contribute to the development of revenge (Cota-McKinley et al., 2001; Stuckless & Goranson, 1992), it is conceivable that encouraging release from anger and hatred leads to reductions in the experience of revenge and, ultimately, to reduced PTSD symptoms. Furthermore, the therapist should assess and identify patients' thoughts and fantasies to determine what

cognitive processes sustain their revenge feelings. Patients have to become aware of their dysfunctional cognitions, such as specific attributional processes concerning the trauma and its negative consequences or vengeful ruminating about the event and the perpetrator (Berry et al., 2005). It is important that victims of trauma understand the PTSD-maintaining character of these cognitions and develop motivation and strategies to reduce them. Together with the therapist, revenge-related thoughts and fantasies have to be worked through and replaced by more constructive cognitions. Given that specific dysfunctional cognitions contribute to the development or maintenance of revenge after trauma, reducing or replacing them is hypothesized to enhance the effectiveness of psychotherapeutic treatment of PTSD symptoms (Lamb, 2005; Orth et al., 2003). An additional essential step in the therapeutic process may be to identify motives that underlie intrapersonal revenge phenomena and to satisfy them in a more functional way. Satisfying these motives may enhance patients' ability to release vengeful feelings and thoughts. Useful therapeutic strategies for satisfying motives that drive revenge could include stabilizing patients' self-worth and self-efficacy and restoring their sense of power, control, and security. Patients may also be encouraged to seek legal compensation for harm, losses, and mental and physical impairment resulting from trauma by applying for appropriate financial compensation. In addition, patients may be supported in the process of suing the perpetrator and during the lawsuit so that those responsible can be punished. Strengthening patients' social network and enabling them to seek social support and to accept support from their social network (Müller & Maercker, 2006) may help trauma victims to overcome intrapersonal revenge. Social support in particular has been shown to be an essential factor in coping with traumatic events (Maercker & Schützwohl, 1997) and therefore can be assumed to support the healing process.

In sum, understanding and abandoning intrapersonal revenge phenomena may lead to a decline in PTSD symptoms (Ehlers, 1999; Orth et al., 2003) and provide a basis for more effective treatment of PTSD. Enabling the patients to release vengeful feelings and fantasies and to

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develop more functional coping mechanisms would thus render them essential support in the process of recovering from trauma (Horowitz, 2007).

In the context of trauma therapy, the role of forgiveness and forgiveness-promoting therapeutic approaches also deserves consideration. The current study did not show any protective impact of forgiveness on PTSD symptomatology. This finding questions the usefulness of forgiveness as a goal of therapeutic interventions, as proposed in the literature (Freedman & Enright, 1996; Hebl & Enright, 1993; Reed & Enright, 2006), when dealing with victims of severe type II trauma caused by varied offenders. It does not seem very beneficial to encourage victims of severe trauma involving diffuse responsibility to unilaterally forgive the perpetrators for their transgression (Lamb, 2005) and to develop pro-social attitudes, empathy, and positive affect towards them, as recommended in the literature on forgiveness (Freedman & Enright, 1996). Assuming as well that the psychological process of increasing goodwill and positive emotions towards the transgressor may be more complicated, effortful, and time-intensive than the process of revenge reduction (McCullough et al, 2003), the usefulness of forgiveness in trauma therapy is questionable. Another objection to fostering forgiveness is that the focus in trauma therapy should be on the victim and on the wrong that was committed, not on the perpetrator. Moreover, forgiveness approaches in therapy presuppose that the patient wants to forgive but is unable to do so and imply that forgiving alone is the right way to overcome trauma and that unforgiveness is immoral (Lamb, 2005). This may work as an additional stressor and compel the victim to forgive (Lamb, 2005). Taking into consideration all these problematic aspects of forgiveness in therapy and the lack of a protective effect of forgiveness on the occurrence of PTSD, as found in the current study, the essential therapeutic goal when treating victims of severe trauma should be the reduction of intrapersonal revenge rather than the promotion of forgiveness. The early therapeutic steps of proposed forgiveness intervention methods (Enright & Fitzgibbons, 2000) that target the reduction of revenge may nonetheless be useful; the later steps that promote forgiveness could be omitted. As mentioned earlier, forgiveness may en-

hance subjective well-being or life satisfaction, possibly making forgiveness interventions useful in later stages of trauma therapy (McCullough et al., 2001). Given the limited knowledge of effects of forgiveness in survivors of trauma, future studies could compare the health-improving effects of interventions that aim at reducing feelings and thoughts of revenge with those of interventions that promote forgiveness to determine the most helpful therapeutic strategies for trauma victims.

Societal implications

Findings from previous studies as well as the current findings and their implications presented in this thesis are not only of therapeutic but also of high societal relevance and could be transferred to concrete societal measures to support trauma victims in letting go their revenge. Receiving adequate compensation for harm and losses and societal acknowledgment of an injustice that has happened are important factors that may help victims in their recovery process. Additionally, adequate medical care and psychotherapeutic treatment need to be provided for victims of trauma to prevent the development of revenge and the chronification of PTSD (see *Therapeutic implications*).

Satisfactory financial compensation, for instance, not only re-equilibrates losses but also helps to restore justice, and therefore may contribute to reductions in intrapersonal revenge phenomena (Orth, 2004) and, ultimately, to the amelioration of PTSD symptomatology. In the case of former political prisoners of East Germany, adequate financial compensation would give them access to required medical care and treatment, and would also provide compensation for the disadvantages in professional development, education, and career that they experienced because of the time they spent in prison and the negative health consequences of imprisonment. Moreover, legal punishment of the perpetrators may validate moral standards and therefore help to restore the victims' belief in justice and thus provide relief from revenge (Orth, 2004). It is important that perpetrators or persons responsible for the traumatic experiences are legally pun-

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ished so that the victims see that transgressions are not tolerated by society and that justice can occur even after experiences of injustice and harm. In addition, it has also been shown that acknowledgement from third parties contributes to reducing revenge motivations (Eaton et al., 2006). Especially in the case of political imprisonment, society should pay tribute to the victims by symbolic compensation and acknowledgement of their suffering.

It is important that the victims be included in these processes and asked what they believe would be helpful for them. In the current study, the participants were explicitly asked what would be useful for them personally in order to perceive justice and to feel acknowledged as victims. Findings show that former East German political prisoners are by no means satisfied with current levels of compensation and acknowledgement. Factors they reported as potent in restoring justice and providing acknowledgement (see Mutter, 2011) were, for instance, perpetrator punishment and preventing perpetrators from having better professional positions or receiving higher pensions than the victims, which is often the case in Germany today. Moreover, participants said that they wished for symbolic compensation in the form of free entrances to swimming pools or museums as well as in the form of medals, memorials, or annual Memorial Days. Additionally, the wish for respect and acknowledgement from society and the social environment was expressed. Another important wish was that younger generations learn about political imprisonment in East Germany in their history lessons and that society does not forget the injustice that happened (Mutter, 2011). These wishes and claims clearly pose societal and political challenges that will hopefully be fulfilled in the future.

Conclusion

The current thesis provides empirical evidence for several main issues: First, the experience of intense feelings and cognitions of revenge after trauma is a risk factor for severe and persistent PTSD symptoms in the long run after trauma. Intentional aspects of revenge, in contrast, seem to play less of a role in PTSD symptomatology. Second, mental phenomena related to revenge and forgiveness are more complex than just those of being vengeful or forgiving. Findings indicate that trauma victims may experience revenge, hold grudges without being vengeful, or be forgiving. Third, promoting forgiveness of those responsible for trauma does not seem protective for PTSD in trauma survivors. Fourth, general attitudes toward revenge and forgiveness apparently have no influence on current PTSD symptoms. Fifth, current findings indicate the importance of conceptually separating current mental states from general attitudes when investigating revenge and forgiveness. Sixth, the theoretical model of revenge presented in the current work and preliminary findings on the associations proposed in the model suggest that specific emotional, cognitive, and motivational components contribute to the occurrence of intrapersonal revenge after trauma. Open tasks for future studies are to investigate causalities that underlie the reported relations between revenge and PTSD and revenge and forgiveness, prove the transferability and generalizability of the current results to other trauma groups, and test and modify the proposed revenge model. Findings of the current work also have implications for therapeutic and societal interventions in survivors of severe trauma. Thus, this work contributes to a better understanding of intrapersonal aspects of revenge after trauma and their impact on mental health, which is an essential precondition for the development of adequate help for survivors of severe trauma.

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ZUSAMMENFASSUNG

Das Auftreten von Rachegefühlen und -fantasien bei Opfern von Traumatisierung ist ein relativ bekanntes Phänomen, das sowohl in der psychologischen Forschung als auch in Berichten aus der psychotherapeutischen Praxis beschrieben wurde (Horowitz, 2007; Orth et al., 2003). Frühere Studien (z.B. Bayer et al., 2007; Goenjian et al., 2001; Orth et al., 2006) konnten zudem Zusammenhänge zwischen dem Auftreten von intrapersonalen Aspekten von Rache, d.h. insbesondere von Rachegefühlen und -gedanken, und der Posttraumatischen Belastungsstörung (PTBS), welche als eine der häufigsten Störungen nach traumatischen Erlebnissen gilt (APA, 2000), aufzeigen. Allerdings beschränkt sich die bisherige psychologische Forschung hauptsächlich auf Beschreibungen des Auftretens von Rachephänomenen nach traumatischen Ereignissen und deren möglichen Zusammenhang zu PTBS, wohingegen zu Prozessen der Entstehung von Rache nach Traumatisierungen, möglichen internen und externen Einflussfaktoren sowie zum Zusammenhang zwischen Rache und anderen psychologischen Variablen, insbesondere Vergebung, bisher wenig systematische Forschung existiert. Hinzu kommt, dass aufgrund fehlender Längsschnittuntersuchungen bisher keine definitiven Aussagen über die zugrundeliegende Kausalität des Zusammenhangs zwischen Rache und PTBS möglich sind.

Die vorliegende Dissertation knüpft an diese bestehenden Forschungslücken an und widmet sich der Erforschung psychischer Aspekte von Rache nach traumatischen Erlebnissen. Die Arbeit umfasst einen theoretischen Beitrag, der einen umfassenden Überblick über den aktuellen psychologischen Wissens- und Forschungsstand zum Thema Rache gibt, sowie zwei empirische Artikel, die ausgewählte Forschungsergebnisse zu Rache und PTBS präsentieren.

Bei der im Rahmen des Dissertationsprojekts durchgeführten empirischen Untersuchung handelt es sich um eine Folge-Studie zu der 1995 in Dresden durchgeführten Studie zu psychischen Langzeitfolgen von Traumatisierung durch politische Haft in der DDR (Maercker & Schützwohl, 1997). Etwa 13 Jahre später, im Jahr 2008, wurden die damaligen Studienteilnehmer erneut eingeladen und interviewt, wobei ein Schwerpunkt der Folge-Befragung auf der

Thematik der psychischen Rachephänomene lag. Politische Inhaftierung in der DDR kann aufgrund ihrer langen Dauer und der extremen Haftbedingungen, die sowohl körperliche als auch psychische Misshandlungen beinhalteten, als besonders schwerwiegende Form der Traumatisierung angesehen werden (Bauer et al., 1993; Maercker & Schützwohl, 1997). Es kann daher angenommen werden, dass ehemalige politische Häftlinge der DDR unter anhaltenden und schweren PTBS-Symptomen (Maercker, 1998) sowie unter intensiven Rachegeanken und -gefühlen leiden. Inhalte und empirische Ergebnisse, welche in den drei in die vorliegende Arbeit eingebundenen Artikeln behandelt werden, sollen im Folgenden kurz vorgestellt werden:

Der erste Artikel stellt eine theoretische Annäherung an das komplexe Phänomen Rache dar. Auf Basis einer umfassenden Literaturrecherche werden theoretische Annahmen und empirische Ergebnisse bisheriger Forschung zu Rache vorgestellt und erläutert. Vor diesem theoretischen Hintergrund wird eine Definition von Rache als eine komplexe Emotion, die emotionale, kognitive und motivationale Komponenten umfasst (Emmons, 1992), präsentiert, welche die Grundlage für die beiden empirischen Artikel zu psychischen Rachephänomenen darstellt. Des Weiteren wird ein theoretisches Prozess-Modell der Rache vorgeschlagen, welches den Kern des ersten Artikels darstellt. Die Hauptannahmen des vorgeschlagenen Modells besagen, dass psychische Rachephänomene und PTBS miteinander in Beziehung stehen, und dass spezifische emotionale (Ärger und Hassgefühle), kognitive (Attributionen und generelle Einstellungen), und motivationale Variablen (indiziert durch Selbstwert und Selbstwirksamkeitserwartung) der Entstehung von Rache zugrunde liegen und möglicherweise einen mediierenden Einfluss auf den Zusammenhang zwischen Rache und PTBS ausüben. Zudem geht das Modell von einem engen Zusammenhang zwischen Rache und Vergebung aus. Das präsentierte Rache-Modell ist ausschliesslich theoretischer Natur und konnte anhand der verfügbaren Daten aus der Stichprobe ehemaliger politisch Inhaftierter nicht empirisch überprüft werden.

Der zweite Artikel dieser Dissertation befasst sich mit dem spezifischen Beitrag von psychischen Rachephänomenen zur Vorhersage aktueller PTBS-Symptome in der untersuchten

Stichprobe. Anhand multipler hierarchischer Regressionsanalysen wurde der Anteil an Varianz in den aktuellen PTBS-Symptomen, der anhand der untersuchten Racheaspekte erklärt werden kann, getestet, wobei für die Vorhersagekraft etablierter Standardprädiktoren für PTBS kontrolliert wurde. Die in die Analysen einbezogenen Standardprädiktoren sind soziodemografische Variablen, Traumacharakteristika, soziale Unterstützung sowie die frühere PTBS-Symptome, welche in der ersten Studie 1995 erhoben wurden. In der Verfügbarkeit längsschnittlicher Daten zu PTBS, und zwar sowohl von Selbstbeurteilungsdaten (IES-R) als auch klinischer Symptombewertung (DIPS), besteht ein bedeutsamer Vorteil der vorgestellten Studie. Die Ergebnisse zeigen hypothesenkonform, dass Rachegefühle und -gedanken signifikant zur Vorhersage der aktuellen PTBS-Symptomatik in der untersuchten Stichprobe beitragen. Racheintentionen scheinen im Gegensatz dazu keinen prädiktiven Wert für die aktuelle Symptomatik aufzuweisen. Diese Ergebnisse können im Sinne eines PTBS-aufrechterhaltenden Einflusses von Rachegefühlen und -gedanken im Langzeitverlauf interpretiert werden, was sich auch durch Ergebnisse früherer Studien und durch theoretisch fundierte Erklärungsmodelle stützen lässt (z.B. Ehlers et al., 1998; Feeny et al., 2000). Die Reduzierung von Rachephänomenen durch psychotherapeutische Interventionen in der Behandlung von Traumaopfern verspricht nach diesen Ergebnissen eine Verbesserung der PTBS-Symptomatik (Foa et al., 1995; Orth et al., 2006).

Der dritte Artikel, der in der vorliegenden Arbeit vorgestellt wird, befasst sich mit dem Zusammenhang zwischen Rache und Vergebung nach traumatischen Erlebnissen sowie deren Beziehung zu PTBS. Anhand von Hauptkomponentenanalysen wurde die Faktorstruktur von unterschiedlichen Aspekten von Rache und Vergebung ermittelt. Aufgrund theoretischer Erwägungen (Brown, 2003) wurden diese Analysen separat für aktuelle Rache- und Vergebungsphänomene und für generelle Einstellungen gegenüber Rache und Vergebung vorgenommen. In beiden Fällen ergaben die Hauptkomponentenanalysen jeweils drei Faktoren. Für aktuelle Rache und Vergebung wurden die Faktoren Rache, Groll und Vergebung identifiziert. Als generellen Einstellungen zugrunde liegende Faktoren ergaben sich Ablehnung von Rache, Befürwor-

tung von Rache und Befürwortung von Vergebung. Diese Ergebnisse belegen hypothesenkonform, dass Rache und Vergebung nicht als Pole eines eindimensionalen psychischen Phänomens zu verstehen sind, wie von einigen Autoren angenommen (z.B. Mullet et al., 1998), sondern distinkte psychische Prozesse darstellen. Demnach sind Traumaüberlebende keinesfalls lediglich entweder rachsüchtig oder vergebend bzw. entweder Rache befürwortend oder Vergebung befürwortend. Zusätzlich zu den Hauptkomponentenanalysen wurde der prädiktive Wert der ermittelten Faktoren für die aktuelle PTBS-Symptomatik getestet (statistisches Prozedere wie im 2. Artikel). Die Ergebnisse zeigen hypothesenkonform, dass im Gegensatz zu Rache weder Vergebung noch Groll einen signifikanten Einfluss auf die PTBS-Symptomatik haben. Generelle Einstellungen zu Rache und Vergebung sind ebenfalls nicht prädiktiv für aktuelle PTBS-Symptome. Aus diesen Ergebnissen lässt sich schlussfolgern, dass nach schweren Traumatisierungen Vergebung nicht notwendigerweise einen gesundheitsförderlichen Einfluss haben muss, wie beispielsweise für Vergebung in Partnerschaften beschrieben (McCullough et al., 2001; Worthington et al., 2007). Der Nutzen von in der Literatur vorgeschlagenen Vergebungsinterventionen (McCullough et al., 2001) ist daher für die Therapie schwer traumatisierter Patienten als eher fraglich einzuschätzen.

Eine umfassende Diskussion am Ende dieser Arbeit integriert die drei Artikel inhaltlich und diskutiert relevante Aspekte der vorgestellten Ergebnisse, deren psychotherapeutische und gesellschaftliche Implikationen sowie mögliche methodische Einschränkungen der durchgeführten empirischen Untersuchung. Zusammenfassend kann festgehalten werden, dass die vorliegende Arbeit wichtige Einblicke in bisher unerforschte Themen der Trauma- und Racheforschung ermöglicht und somit einen wichtigen Beitrag zum besseren Verständnis von psychischen Rachephänomenen nach Traumatisierung leistet. Die präsentierten Ergebnisse sind insbesondere auch für die psychotherapeutische Praxis von Relevanz: Das Auftreten von Rachegefühlen und -gedanken sollte bei der Behandlung von PTBS keinesfalls vernachlässigt, sondern in die therapeutischen Massnahmen integriert werden.

APPENDIX**Appendix A: Impact of Event Scale – Revised (IES–R; Weiss & Marmar, 1997; German translation Maercker & Schützwohl, 1998)**

INSTRUCTIONS: We would like to ask you to think about your political imprisonment.

Below is a list of difficulties people sometimes have after stressful life events. Please read each item and then indicate how often you experienced each difficulty **during the past week** with respect to your experience of political imprisonment in former East Germany.

Item Response Anchors are 0 = Not at all; 1 = Rarely; 3 = Sometimes; 5 = Often.

1. Any reminder brought back feelings about it.
2. I had trouble staying asleep.
3. Other things kept making me think about it.
4. I felt irritable and angry.
5. I avoided letting myself get upset when I thought about it or was reminded of it.
6. I thought about it when I didn't mean to.
7. I felt as if it hadn't happened or wasn't real.
8. I stayed away from reminders of it.
9. Pictures about it popped into my mind.
10. I was jumpy and easily startled.
11. I tried not to think about it.
12. I was aware that I still had a lot of feelings about it, but I didn't deal with them.
13. My feelings about it were kind of numb.
14. I found myself acting or feeling like I was back at that time.
15. I had trouble falling asleep.

Appendix

16. I had waves of strong feelings about it.
17. I tried to remove it from my memory.
18. I had trouble concentrating.
19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart.
20. I had dreams about it.
21. I felt watchful and on guard.
22. I tried not to talk about it.

Appendix B: Revenge Scale (Orth, 2003; own translation)

INTRODUCTION: We would like to address a specific emotion. After experiences of injustice, people sometimes experience feelings of revenge and a wish to get even with those responsible. Please read each item and then indicate how often you experienced such feelings and thoughts of revenge **during the preceding four weeks** with respect to your experience of political imprisonment in former East Germany.

Item Response Anchors are 0 = Not at all to 5 = Very often.

1. How often did thoughts involuntarily come to mind about doing something to the perpetrator?
2. How often did you fantasize about getting back at the perpetrator/s for what he/she/they did to you?
3. Did you experience feelings of revenge toward the perpetrator/s?

Appendix C: Self-developed Revenge Intentions Scale

Same INSTRUCTION and item response anchors as for the Revenge Scale (Orth, 2003)

1. Have you ever seriously planned to take revenge in any form on the person/s responsible?
2. If you had the possibility, would you harm the person/s responsible in order to take revenge?
3. Have you ever taken steps to take revenge on the responsible person/s?

Appendix D: Vengeance Scale (Stuckless & Goranson, 1992; own item retranslation)

INSTRUCTION: In the following section, statements on revenge and forgiveness are presented.

Please read each item, and then indicate your agreement with them.

Item Response Anchors are 1 = Not agree at all to 7 = Totally agree.

1. Getting even with someone who treated me unfairly is not worth the time and effort.
2. It is important for me to get back at people who have hurt me.
3. No matter who hurt me I will restore the balance.
4. It is always better to forego revenge.
5. I follow the slogan: Let bygones be bygones.
6. There is nothing wrong with paying back someone who hurt me.
7. I don't just get mad—I get even.
8. I can easily forgive the ones who hurt me.
9. I am not a very vengeful person.
10. I adhere to the motto: An eye for an eye, a tooth for a tooth.
11. Revenge is morally wrong.
12. If someone causes me trouble, I'll find a way to make them regret it.

Appendix

13. People who always insist on revenge are repulsive.
14. After being treated unfairly I cannot live in peace until I get my revenge.
15. Honor demands getting back at someone who hurt you.
16. In general, it is better to be merciful than to seek revenge.
17. If someone provokes me he deserves the punishment I will choose for him.
18. It's always better to turn the other cheek.
19. To have a desire for vengeance would make me feel ashamed.
20. Revenge is sweet.

Appendix E: Tendency To Forgive Scale (TTF; Brown, 2003; own item retranslation)

INSTRUCTION: In the following section, statements on revenge and forgiveness are presented.

Please read each item, and then indicate your agreement with them.

Item Response Anchors are 1 = Completely not true to 7 = Totally true.

1. When someone hurts my feelings, I tend to get over it quickly.
2. If someone wrongs me, I often think about it afterward.
3. I have a tendency to harbor grudges.
4. When people wrong me, my approach is just to forgive and forget

**Appendix F: Attitudes Toward Forgiveness Scale (TTF; Brown, 2003; own
item retranslation)**

Same INSTRUCTION and item response anchors as for the TTF

1. I believe that forgiveness is a moral virtue.
2. Justice is more important than mercy.
3. It is admirable to be a forgiving person.
4. I have no problems at all with people staying mad at those who hurt them.
5. Forgiveness is a sign of weakness.
6. People should work harder than they do to let go of the wrongs they have suffered

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Academic Career and Education

- | | |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Since 09/2010 | Research associate, Department of Academic Program Development, University of Zurich, Switzerland |
| 07/2007 – 07/2010 | Doctoral student, Department of Psychopathology and Clinical Intervention, University of Zurich, Switzerland

Dissertation: ‘Intrapersonal revenge phenomena in the context of trauma and PTSD’ (Advisor: Prof. Dr. Dr. A. Maercker) |
| 01/2008 – 12/2008 | Data collection, Psychiatric Clinic, Dresden University, Germany |
| 08/2005 – 06/2007 | Research associate, International Office, University of Leipzig, Germany |
| 06/2005 | Diploma in psychology (equivalent to M. A.)
Grade average: 1.2 (very good) |
| 09/ 1998 – 07/2005 | Department of Psychology, University of Leipzig, Germany |
| 06/2003 – 08/2003 | Internship, TÜV Medical-Psychological Institute GmbH, Leipzig, Germany |
| 04/2003 – 05/2003 | Internship, University Clinic for Psychiatry and Psychotherapy for Children and Young Adults, Leipzig, Germany |
| 11/2002 – 01/2003 | Internship, Neurological Rehabilitation Center (Michels Kliniken), Leipzig, Germany |
| 05/1997 | Abitur (Diploma from German secondary school qualifying for university admission), Friedrichgymnasium, Altenburg, Germany |

Further Education

- | | |
|---------------|-----------------------------------------------------------------------------------------|
| Since 01/2011 | Post-graduate training in cognitive behavioral therapy, University of Freiburg, Germany |
|---------------|-----------------------------------------------------------------------------------------|

Publications

- 06/2011 Gäbler I, Maercker A (2011) Intrapersonal revenge and forgiveness in the context of severe traumatization and PTSD. *Manuscript submitted for publication*.
- 05/2011 Gäbler I, Maercker A (2011) Revenge phenomena and Posttraumatic Stress Disorder in former East German Political Prisoners. *Journal of Nervous and Mental Disease* 199(5): 287–294
- 05/2010 Gäbler I, Maercker A (2011) Revenge after trauma: Theoretical outline. In M Linden, A Maercker (eds) *Embitterment—societal, psychological, and clinical perspectives*. Vienna: Springer.
- 03/2010 Gäbler I, Maercker A, Schützwohl M (2010) Langzeitfolgen politischer Inhaftierungen in der DDR. Eine Folgestudie zur Dresdner Untersuchung. Zurich: University of Zurich (ed.).
- 10/2009 Maercker A, Gäbler I, Siegrist Ph (2010) Psychologie der Extremlastungen. In: Schulze, C. (Hrsg.) *Die Anerkennung haft- und verfolgungsbedingter Gesundheitsschäden – Kritische Situationsbeschreibung und Erörterung von Lösungsmöglichkeiten*. Berlin: UOKG e.V.
- 04/2008 Maercker A, Gäbler I (2008) Aspekte der heutigen posttraumatischen Belastung bei Opfern der Bombardierung Dresdens im 2. Weltkrieg. *Wehrmedizinische Monatsschrift* 52(4): 123–128.
- 05/2006 Deutsch T, Gäbler I (2006) BISS - Befragung Internationaler Studierenden zur Studiensituation. Leipzig: Akademisches Auslandsamt der Universität Leipzig (ed).
Internet: http://eenc.uni-leipzig.de/~akadem/Downloads/Broschueren/BISS_intern_stud.pdf

Conference Presentations

- 03/2010 Gäbler I, Maercker A (2010) Rache nach Traumatisierung: Der Zusammenhang zwischen PTBS und Rachephänomenen in einer Langzeituntersuchung politisch Inhaftierter der DDR. Presentation at the 12th Annual Meeting of the German Society for Psychotraumatology, DeGPT, Göttingen; Germany.
- 05/09 Gäbler I (2009) Die Entstehung von Rachegefühlen nach Traumatisierung - Ein Langzeit-Längsschnitt. Presentation at the 6th Workshop Congress for Clinical Psychology and Psychotherapy & the 27th Symposium of the Professional Group for Clinical Psychology and Psychotherapy of the German Association of Psychology, DGPs, Zurich, Switzerland.
- 03/2009 Gäbler I, Maercker A (2009) Feelings of revenge in former political prisoners of the GDR - A follow-up of the Dresden-study 1994-1996. Presentation at the Embitterment-Symposium, Teltow/Berlin, Germany.

- 12/2008 Gäßler I, Maercker A, Schützwohl M (2009) PTB-Symptomatik und Rachephänomene in einer Langzeituntersuchung politisch Inhaftierter der DDR. Presentation a meeting of psychiatrist and psychologists at the Psychiatric Clinic of the Dresden University, Germany.

Conference poster presentations

- 09/09 Gäßler I, Maercker A, Schützwohl M (2009) PTB-Symptomatik und Rachephänomene in einer Langzeituntersuchung politisch Inhaftierter der DDR. Poster presentation at the 7th Biennial Meeting Mitteldeutsche Psychiatrietage, Dresden, Germany.
- 09/09 Poster award at the 7th Biennial Meeting Mitteldeutsche Psychiatrietage, Dresden, Germany.
- 05/09 Gäßler I, Maercker, A (2009) Rachegefühle als Risikofaktor für PTBS. Poster presentation at the 11th Annual Meeting of the German Society for Psychotraumatology, DeGPT, Bielefeld, Germany.
- 05/08 Gäßler I, Maercker A (2008) Rachegefühle als dysfunktionaler Prozess für PTBS bei ehemaligen politisch Inhaftierten. Poster presentation at the 10th Annual Meeting of the German Society for Psychotraumatology, DeGPT, Basel, Switzerland.
- 03/08 Gäßler I, Maercker A (2008) Rachegefühle als Risikofaktor für PTBS. Poster presentation at the 26th Symposium of the Professional Group for Clinical Psychology and Psychotherapy of the German Association of Psychology, DGPs, Potsdam, Germany.

Teaching

- Spring Semester 2010 Seminar: Structured Clinical Diagnostics (advanced level)
 Spring Semester 2009 Seminar: Clinical Case Histories (main course level), together with Dr. H.-M. Zöllner, Dr. R. Kowalewski, Dr. A. Theodoridou

Supervision of Students

- Corinne Günter (Lizentiant Thesis „Einfluss interpersoneller und sozialer Faktoren auf die PTBS-Symptomatik bei ehemaligen politisch Inhaftierten der DDR“)
- Stephanie Mutter (Lizentiant Thesis „Ansichten ehemalig politisch Inhaftierter der DDR zu Gerechtigkeit und Gesellschaftlicher Anerkennung“)

Other Academic Activities

- SS 2009 Preparation and development of the modular examinations, Clinical Psychology
 SS 2010 (Bachelor level)

Zurich, August, 2011